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Out goes rust

when

Beth-cu-loy pipe

goes in

If you use pipe in locations where it is subject to severe atmospheric corrosion the following facts about Beth-Cu-Loy Pipe will be of interest to you.

Tests run by the American Society for Testing Materials on irons and steels within a price range making them available for pipe, show copper-bearing steel of composition identical with that of Beth-Cu-Loy to be the best corrosion-resistor of them all. This steel outlasted plain steel by 2 to 2½ times and other material by substantial margins.

Beth-Cu-Loy costs only slightly more than ordinary steel. This original small increase in cost is repaid many times over in longer service.



**BETHLEHEM
STEEL
COMPANY**

THE IRON AGE

JULY 14, 1938

ESTABLISHED 1855

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Time Alone Will Tell

FOR a long time the Government has put pressure on the steel industry to reduce prices and to alter or abandon its basing point system. Two weeks ago, the industry "obliged" on both of these points.

Speculation is rife as to the probable effects, but speculation will not settle the matter. They will have to be tested by performance.

The price change is the lesser in significance and will be the sooner tested. A few weeks or months at most will determine whether or not the Administration's assumption that wages can be disassociated from prices is true or false.

The test of the change in marketing practice will take longer. And the change itself holds far more significance than the price cut.

In this connection it is interesting to quote the following excerpts from the able study of steel under the NRA code made by Daugherty, de Chazeau and Stratton from 1934 to 1936 and published in 1937 under the title "Economics of the Iron and Steel Industry." We quote from pages 544 and 545:

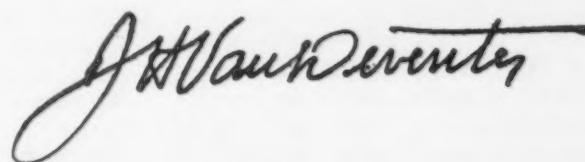
"Thus many steel mills are not situated favorably relative to their markets, nor would they be in a position, by virtue of assembly costs and productive efficiency, to retain the customers they have secured under a basing-point delivered-price system if they were compelled by law to sell all steel products f.o.b. mill.

"This situation is not an adequate reason for the indefinite continuance of an economically unsound and socially undesirable pricing system. It is, however, a compelling reason for the critical appraisal of any proposed substitute, because abrupt change would disrupt the established competitive value of location both for the plants of steel mills and for those of consuming industries.

"... Only a careful analysis of the economic forces which impinge upon the production, distribution, and demand for a given product may be expected to indicate the type of pricing system that will secure desirable results. There is no social virtue in a low price *per se*, not only because price must be related to quality of product and to quantity available but also because it must provide reasonable continuity in production and progressive development. A price that confers a temporary advantage on certain classes of consumers at the cost of maladjustment within the economic structure (and it may be a cause as well as an effect), unemployment, loss of capital, and the throttling of the application of new improvements is certainly not in the public interest and, in the long run, seldom in the interests of those consumers who receive temporary benefits."...

"In the long run, the method of pricing steel must be one that is consistent with the economic conditions under which the industry operates, that conforms with the major price requirements of consuming industries, and that promotes progressive evolution of the industry."

It remains to be seen whether or not this deviation from established marketing practice moves toward or away from the objectives of the last paragraph quoted above. Time alone will tell.

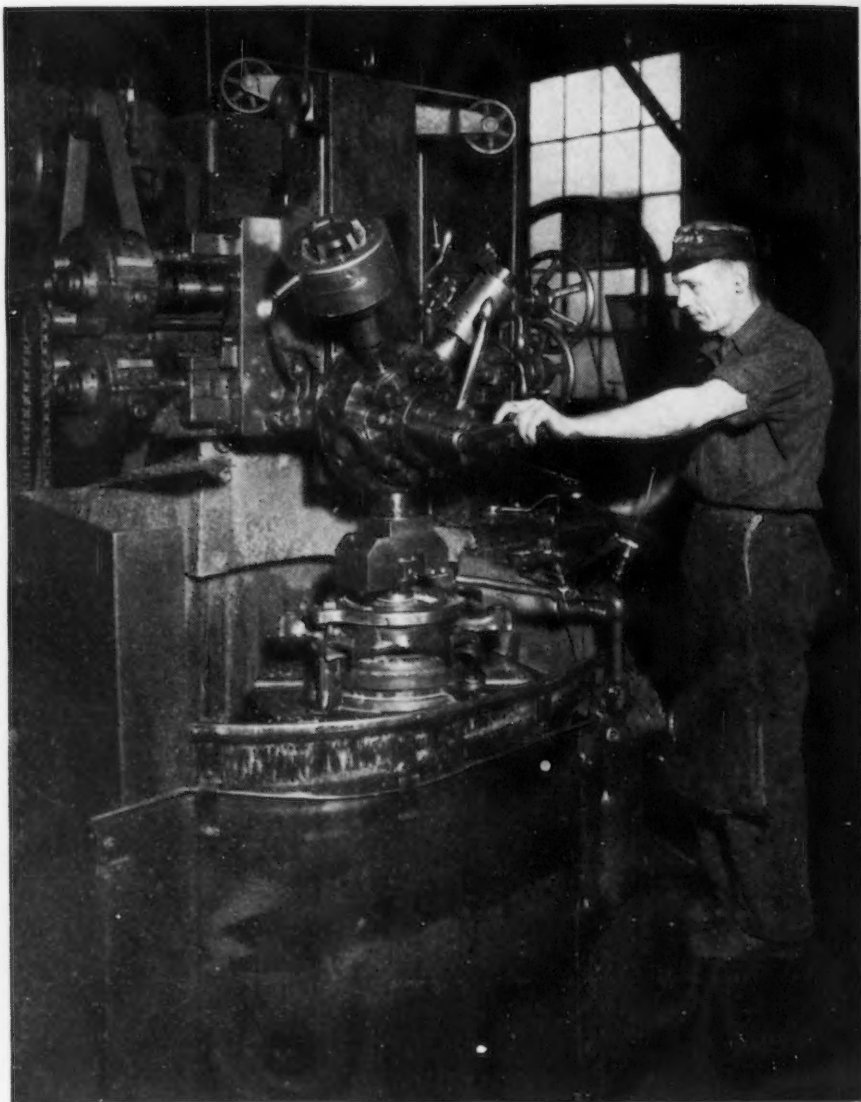


• • •

FIG. 2

A FOUR station setup on the same type machine uses 15 tools for further cutting operations.

• • •



Multiple Tool Machining of Malle

THE present trend toward multiple tool set ups is rapidly intensifying consideration of the machining qualities of various metals. In this respect malleable iron continues to retain its wide acceptance as a working material because, in addition to other desirable characteristics, its high machinability makes it well adapted to the economies of multiple tooling. Furthermore, the metal's smooth surface and internal structure result in satisfactory tool

life at high speeds and productive depths of cuts.

With about 75 per cent of all heavy duty truck and truck trailer wheels being extensively machined malleable castings, the results obtained in the machine shop of one large producer indicate the modern possibilities. At this plant, malleable wheel castings are poured, annealed, machined, and assembled, and are shipped ready for immediate attachment to trucks. Upon receipt from the foundry the wheel

castings are placed, inside surface up, in a 24-in. Bullard vertical boring mill (Fig. 1) equipped with a universal three-jaw chuck. This chuck has special soft jaws machined to wheel contours.

Three tool stations are employed on the first machine using box type tools with pilot bars within hardened bushings. The first station contains 14 cutting tools, and finishes for the wheel bearing cup and brake drum pilots. Tolerances are held to 0.0015



° ° °

FIG. 1

MALLEABLE Wheel casting on 24 in. vertical boring mill. A total of 19 cutting edges on the three station setup machine 15 wheels per hour.

° ° °

° ° °

By C. E. HERRINGTON

° ° °

e able Truck Wheels

in. Four tools on the second station cut the groove for the grease slinger, a means of allowing wheel grease to fly free of the brake mechanism. A single tool on the third station finish reams for the bearing cup and brings the bearing cup seat concentric with the brake drum pilots. Production for this machine averages 15 wheels per hr.

For the next production step (Fig. 2), wheels are placed, outside surface up, on another vertical boring mill

of the same type, this machine being fitted with four tool stations. The first station rough bores for the hub cap and faces, using a 10-tool setup. Four tools on the second station rough bore for the bearing cup and turn for a threaded screw hub cap. The third station finish reams for the bearing cup and uses one tool. On the fourth station a die grooves for the hub cap. Here also about 15 wheels per hr. are turned out.

For the operations on these two

steps, sintered carbide tools are used for cutting large diameters, high speed steels for the smaller diameters. Outside diameter surface speed is about 300 ft. per min., inside diameter about 200 ft. per min. Feeds of 0.056 in. and a depth of cut of 1/16 in. are the average for these operations. On the heavy work or roughing stations, 200 to 300 wheels are machined on the small circumferences and from 90 to 100 are machined on the outside circumference between



FIG. 3

SPOKE ends are milled with 5-in. cutters on a milling machine at the rate of 30 wheels per hour.



FIG. 4

MACHINING a large dual type wheel casting to within 0.002 in. for runout on face and diameter.

tool adjustments. Tools are readjusted at these intervals in order to maintain precise dimensional tolerances and do not necessitate a setup breakdown. Finish reaming tool adjustments are made about every 500 wheels.

The third machining operation performed on the wheel castings is the milling of the spoke ends for the rims (Fig. 3). One man operates two Beckert milling machines using five-in. milling cutters. A feed of 0.100 in. per revolution for a 3/16-in. finish is adopted. Thirty wheels per hr. are turned out.

Wheels are then carried to a Baker 321 drill press equipped with a multiple drill head, which drills 6 holes of 27/64 in. diameter at the rate of 60 wheels per hr. Holes are then tapped on a Garvin tapper using a floating tap.

The next operation consists of pressing the steel bearing cups into the axle hole, one on each side of the wheel. A steel seal plate is then bolted to the casting by means of an air bolt turner, and the brake drum mounted. The drum is bolted to the wheel spokes on a wide circle instead of to the hub, and this method prevents swaying of the wheel when in motion.

o o o

FIG. 5

MALLEABLE wheels in various production stages from unfinished casting to final wheel and drum ready for shipment.

o o o

In order to keep the two bearing cups concentric with one another, all operations after the first one are worked from the brake drum pilots, which, during the first operation, are machined absolutely concentric with the bearing cup bore and seats.

Wheels produced range in weight from 25 lb. to 125 lb., the same procedure being followed for all sizes.



Bars and Shapes Tumbled Free of Rust and Scale

ALL steel users are confronted with the problem of rust and scale which makes necessary the cleaning of much of the steel before use. For the most part this cleaning has been done in the past by using hand and motor-driven brushes with consequent high costs and not wholly satisfactory results. About two years ago, however, a tumbling machine was

developed for efficiently cleaning rust and scale from steel bars, shapes and pipe in a fraction of the time required by other methods. J. M. Hilbish and J. K. McCahan, of Pittsburgh, hold patents on the machine and process.

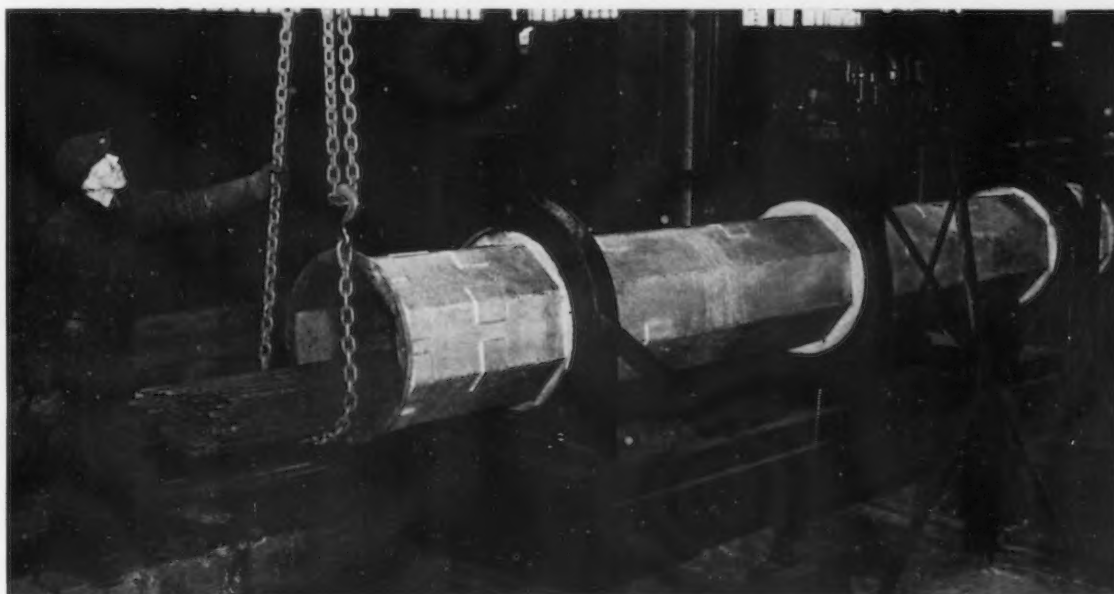
The first machine was completed just prior to the flood of the spring of 1936 and was used in cleaning the flood damaged steel. This job of clean-

ing is said to cost about \$1 per ton. Several improvements have been made in the two additional machines that have been built. It has been found that they are effective in the removal of not only atmospheric corrosion but hard scale. On some types of material, this scale can be removed as efficiently as by the customary pickling or sand-blasting processes. This new

o o o

THIS tumbling machine will efficiently clean rust and scale from steel bars, shapes and pipe in a fraction of the time required by other methods and will coat the material with a protective compound in the process.

o o o



technique is reported to leave the steel in such clean condition that it can be cold drawn, machined, welded, galvanized, enameled, or painted without further cleaning. Descaling by this machine takes from 1 to 1½ hr.

The machine will clean any round, square, flat or hexagon bars. It will clean pipe from 1 to 10 in. in diameter inside and out, structural angles up to 8 in., beams and channels up to 12 in. and plates up to 15 in. wide. The barrel of the latest machine is octagonal in shape, 20 ft. long, 34 in. in diameter and is made of all welded steel plate. It is rotated by a chain drive from a

20-hp. motor, and has a capacity of about 4 tons of steel at each charge. A larger machine is now being designed which will take any length of material up to 70 ft. and about 15 tons of material at each charge.

The barrel is mounted on a fulcrum about one-third of the distance from one end, so that it can be raised or lowered to facilitate loading and to give the longitudinal motion necessary in the descaling process. The charging end is closed by a cover, when operating.

Fine coke or blast furnace slag free from iron is used both as an

abrasive and a cushion for the material. The type of abrasive and coating used depends upon the condition of the material and the ultimate use for which it is intended. If material intended for immediate use is to be cleaned, coke mixed with a light oil is used. If the material is badly pitted, it is first cleaned with slag and then recharged into the machine with sawdust mixed with either light oil or the heavier protective compound, depending upon whether it is for immediate use or for stock. Slag is also used for descaling. To remove free rust, sawdust mixed with the heavy compound or the light oil is used.

Westinghouse Tests 180 Creep Bars Simultaneously In Unique Equipment

METALS and alloys subjected to high temperature and stress will stretch or creep over a long period of time, the creeping being a function of the metal or alloy, time and stress.

In the manufacture of turbine blading, bolts, etc., it is most important to know how materials will creep in service; for if turbine blading creeps much the rotating and stationary blades will collide, or bolts will relax enough to lose tension and therefore may result in machine failure.

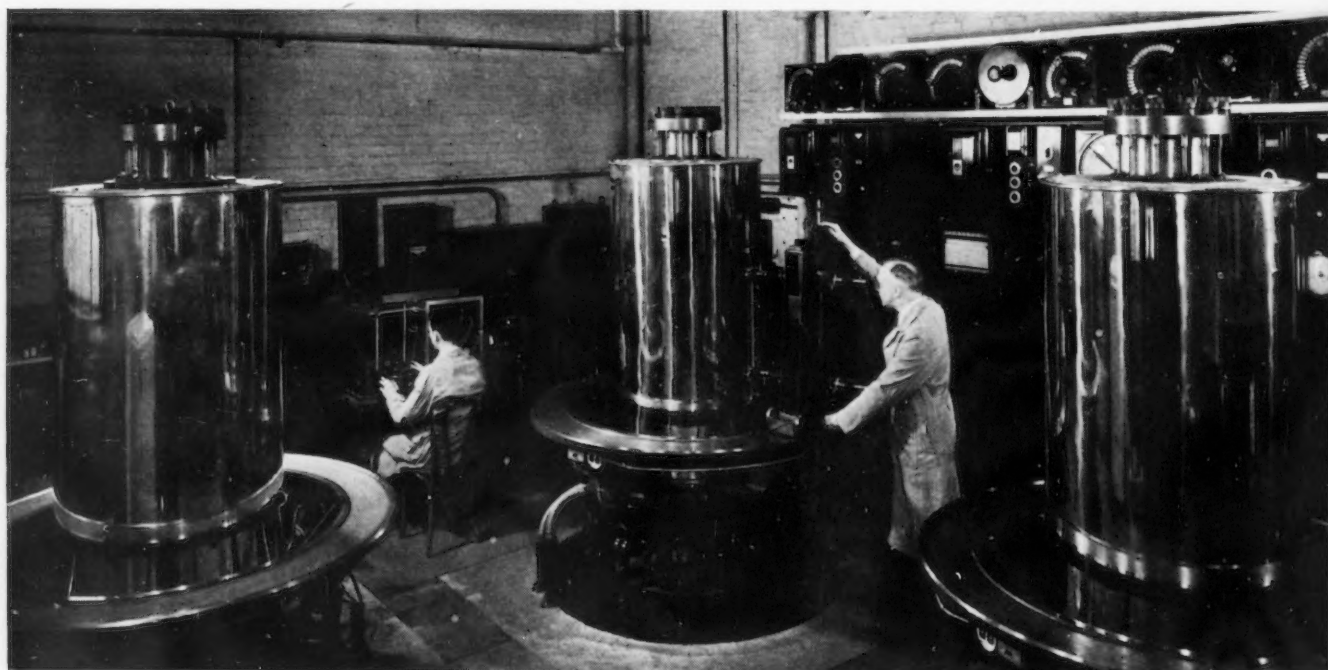
As the result of creep tests, metal-

lurgists have been able to develop alloys which today resist creep at 950 deg. F. as well as the older types of metal did at 850 deg. a few years ago. In making these tests the metallurgists have used usually individual furnaces for each specimen, and with many tests going on at the same time, each of which must be measured regularly for weeks, it is obvious that a great mass of equipment and much time are involved.

To overcome these difficulties, P. G. McVetty, of Westinghouse Research Laboratories, has combined 60 creep

machines into a single unit, and with three of these units operating simultaneously, as in the accompanying photo, it is possible to tests 180 specimens at the same time with a maximum of precision and a minimum of supervision. These unique machines, probably the most elaborate in the world for such a purpose, are each built up of a heavy alloy steel block housed in a three-walled cylinder taller than a man and supported on a foundation of sand. For heat insulation, the outer shell is made of con-

(CONTINUED ON PAGE 55)



THESE three creep machines have just been completed by Westinghouse Research Laboratories. Each can test 60 metal specimens simultaneously.

Use of Graphic Wattmeters in Building Machine Tools



A. H. PLATT

By A. H. PLATT

*Electrical Engineer, The Bullard Co.,
Bridgeport, Conn.*

HOW graphic wattmeters are used in the inspection of Bullard Mult-Au-Matics and vertical turret lathes is outlined in this article, which is from a paper presented by Mr. Platt at the recent Westinghouse Machine Tool Electrification Forum.

USE of graphic wattmeters in the inspection of Bullard Machines Co. started more than 20 years ago. One direct current instrument was used and it was permanently connected in the circuit of a motor to which all vertical turret lathes were brought for final inspection and run. The instrument then in use was the type which used a circular chart.

At present we are using 12 instruments and are equipped for direct current or for one, two or three phase alternating current with voltages ranging from 100 to 600 at frequencies of 25 to 60 cycles. The circular type of chart has been replaced entirely by the strip type. The principal reasons for this change were, first, that with the strip type, the chart feed may be varied over a considerable range and, second, that this type provides ample space for longer tests or for the use of in-

creased chart feed. The chart feed most frequently used is approximately $\frac{3}{4}$ in. per min. In cases in which greater detail is needed, this feed is increased to suit the case.

Two general methods are used: first, that in which the machine is driven by a test motor which has a switchboard type instrument permanently connected in the circuit. This method would be employed if the machine was to be belt driven at the customer's plant or if the customer chose to furnish and mount the motor, or in the event that a test seemed advisable in the earlier stages of the erection of a machine to which a motor would subsequently be applied.

The second method is that used when the machine, during test, is driven by the motor or motors which are to be applied to the finished machine. In such cases portable instruments are used.

Excellent Check Against Excessive Friction

Wattmeter testing of multiple-spindle or multiple-motored machines provides an excellent check against excessive friction between the various components of the machine. In the multiple-spindle type of machine the power required to drive the individual spindles and that required for indexing as well as that used for the movement of heads may be checked and recorded. In the testing of Mult-Au-Matics it is our prac-

tice to repeat these trials after several hours run so that these values, taken during the initial run, may be compared with corresponding readings taken after what might be termed a run-in period. The correct values for these several conditions are quite definitely known for each size and type of machine and any considerable increase may be easily detected. When a remedy for such a condition has been applied and another reading taken, a comparison provides an excellent indication of the effectiveness of the remedy. The usual procedure is to so connect the meter that all motors will be included. If the results thus obtained do not afford sufficient detail, or if any doubt exists regarding the operation of any auxiliary drives, additional meters may be used.

Although two readings are taken during the erection of a Mult-Au-Matic or Contin-U-Matic, only one is taken in the case of a vertical turret lathe. This is taken during the final inspection which consists, among other things, of a run of several hours duration. During this period, the table is driven at various speeds both with and without load and the results are compared with previously established standards.

Machines With Tooling Tested

In some cases the customer submits pieces which are finished on the completed machine. As the machine

is then completely tooled and the parts under normal working pressure, the test provides a check and record of all phases of the machine. Obviously, such charts plainly indicate the time, duration and amount of peak load during each machine cycle. With a multiple-spindle machine, an analysis of the chart may indicate the wisdom of slight changes in the timing of various functions in order that the above-mentioned peak may be reduced.

The tests made during erection are under the direction of the inspection department, while those of completely tooled machines are carried on by the demonstrating department. The charts thus obtained are filed with other data pertaining to the machine.

Charts Indicate Horsepower

It took but a short time to learn that kw. meant little to most men in the mechanical departments. They were concerned primarily with horsepower and did not think kindly of clumsy multipliers. They felt that a glance toward the chart should disclose the horsepower.

At this period, few of our customers' machines were electrically equipped at our plant and, therefore, most of them were driven by the test motors previously referred to. The constant speed equipment was driven by motors which were connected to our 440 volt lines and the motors used ranged from 10 to 25 hp. and were, therefore, within the range of 50-amp. current transformers. With this as a basis, we obtained special charts which would indicate horsepower when used as outlined. These charts have survived the changes which have taken place and the additions which have been made. While it is necessary at times to use a multiplier they may, in most cases, be simple.

To illustrate:



At 440 volts, a chart used for a motor small enough to require no current transformers would be correct when the indicated values were divided by 10. If the motor was of sufficient size to require 100-amp. transformers, the multiplier would be two.

At 220 volts, the results are proportional. It is interesting to note that by changing to 100-amp. transformers, at this voltage, the chart

still indicates correctly with no multiplier.

By increasing the transformer size to 200 amp., the chart is correct when used on a 110-volt circuit.

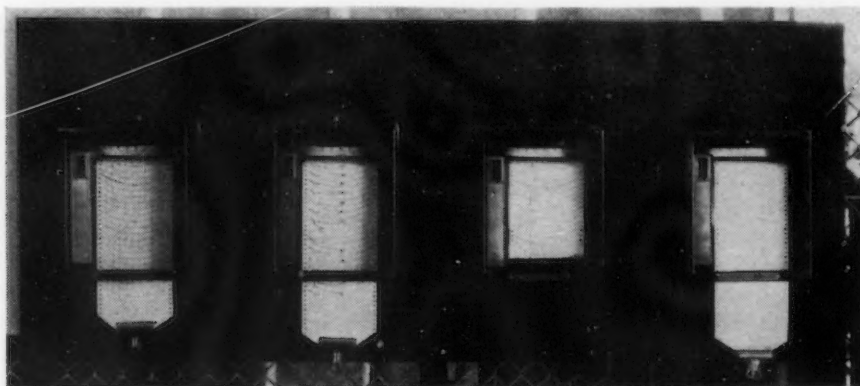
For direct current instruments we chose a capacity of 30 kw. and, in this case, also obtained special charts graduated directly in horsepower. These charts have eliminated the occasional confusion which formerly resulted from the use of multipliers.

Arrangement of Portable Instruments

To meet the requirements of the shop it must be possible at times to quickly add to or change the instruments. For each portable instrument we have provided a wooden cabinet mounted on rubber tired casters. Two sides and the back extend above the top as a safeguard against the instrument falling. The cabinet is divided into an upper and lower compartment which are accessible from full length doors on the front. The upper compartment contains the current transformers and a switch by means of which the transformer primaries may be shunted to prevent the starting inrush reaching the instrument. This switch is operated by a knob which extends through the top of the cabinet. The meter connections leave this compartment through a bushed hole in the top.

The lower compartment is chiefly for the storage of test leads. These leads consist of two two-wire all rubber cables for the current leads and one smaller one as a third potential connection. One end is connected inside the cabinet and the leads leave the lower compartment through a bushed hole in the back. Each wire or cable passes through a strain relief block. As we use a fused disconnect switch for each machine under test, we frequently use the fuse clips as the point of connection for the current circuit. For this purpose,

ABOVE
PORTABLE horsepower recorder and stand used in the inspection of Bullard machines.



AT LEFT
ELECTRICAL horsepower recorders on vertical turret lathe demonstration.

we have used the case of a renewable fuse by passing the two-wire cable through a hole drilled at the center of the case and connecting the ends to the interior of the fuse connections. Strain relief is accomplished by securely binding the cable and fuse case at the point of entrance. The source, or line, connection is marked to insure correct connections. The third potential connection is made through a test clip.

No Damage From Rough Handling

One might assume that this type of instrument, used in a department where heavy machinery is erected, would be subjected to rough handling and that serious damage would frequently result. We have had no such experience. Our principal trouble has resulted from overflow of ink reaching the moving element. This, we believed, was caused by sudden movements of the cabinet. We found that, on some occasions, it was necessary for the erectors or demonstrators to move a cabinet a few inches while it was in service. They were advised of the above and their full cooperation resulted. The cost of repairs on this equipment is now surprisingly low.

While this paper may seem partial to the graphic instrument, we have not overlooked the indicating types with their obvious advantages. We are conducting trials with socket-type instruments and believe that they have application in our testing operations. This is especially true in the case of a socket and test jack for use in making quick and safe connections.

Transformers Now Being Made with Cores Wound from Cold Rolled Strip

A COMPLETELY revolutionary design principle for distribution transformers, involving wound cores instead of the conventional laminated construction, was described in a recent paper by E. D. Treanor, executive engineer of the General Electric distribution transformer department at Pittsfield, Mass. The paper was read before the American Institute of Electrical Engineers in Washington, June 23.

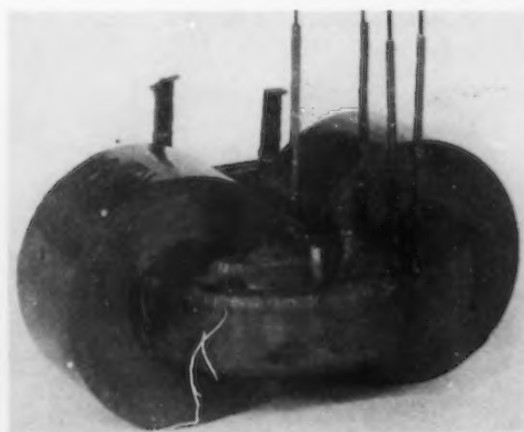
The important new feature of the transformer is its core construction of two continuous strips of relatively low silicon content, cold rolled steel, tightly wound into two metal rings through and around the coils. The coils are oval in shape and of short axial length, interleaved in secondary-primary-secondary arrangement. The two ribbon-like steel strips that comprise the cores of the new transformer are prewound and assembled on machines at high speed.

According to Mr. Treanor, units of 1½, 3, and 5 kva. have been produced in voltage classes of 7620 volts and below.

The wound core is said to eliminate or minimize most of the objections inherent in other types. Flux runs with the grain direction throughout the core, and all material in the core is active. In the wound core transformer, each element of flux finds but one air gap of small length and relatively great area in its path. The result is that little magnetomotive force is consumed in the reluctance of air gaps as compared with other cores.

Steel for the wound cores is slit into desired width for various size cores, and the steel reels are set up in multiple before a prewinding machine and attached to a mandrel which is rotated to draw the strips through tension devices until the cores are built up. Micrometer gages con-

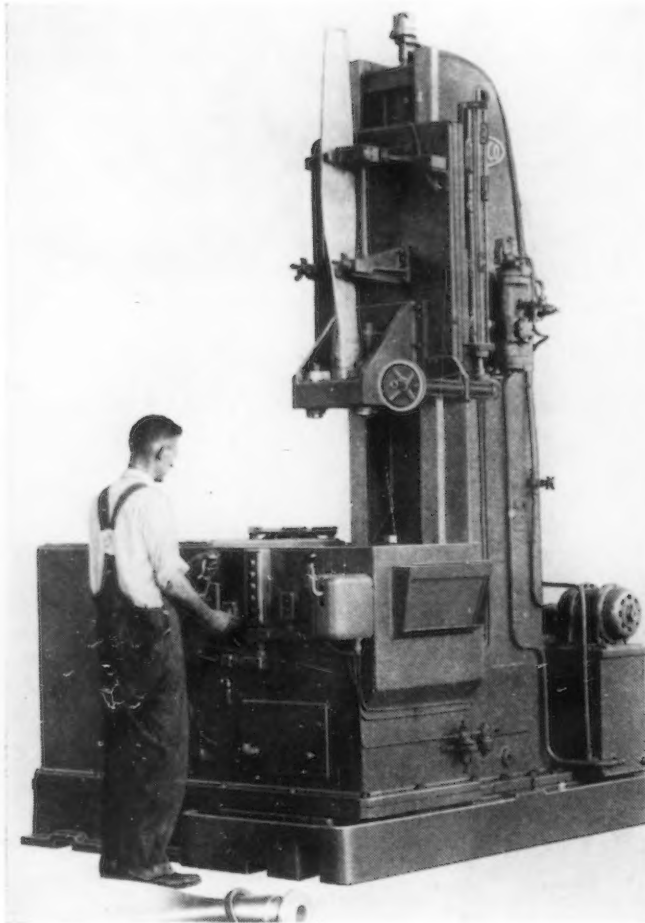
(CONTINUED ON PAGE 55)



ABOVE
CORE and coil assembly of the new G-E wound core distribution transformer. The unit shown is rated at 1½ kva.

AT LEFT
AFTER annealing, the pre-formed cores are re-wound around the electrical coils in their original spiral form in this roll type machine.

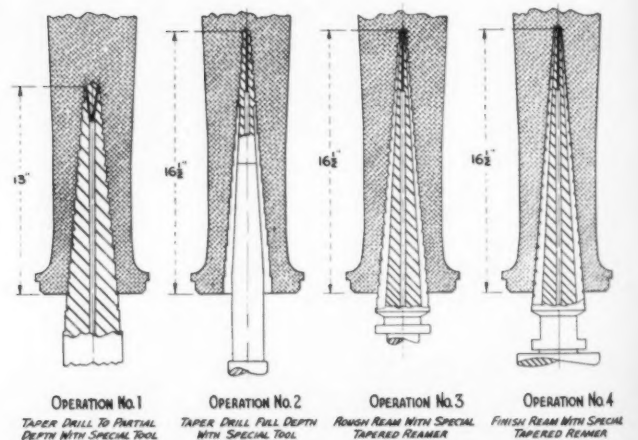
Special Machine



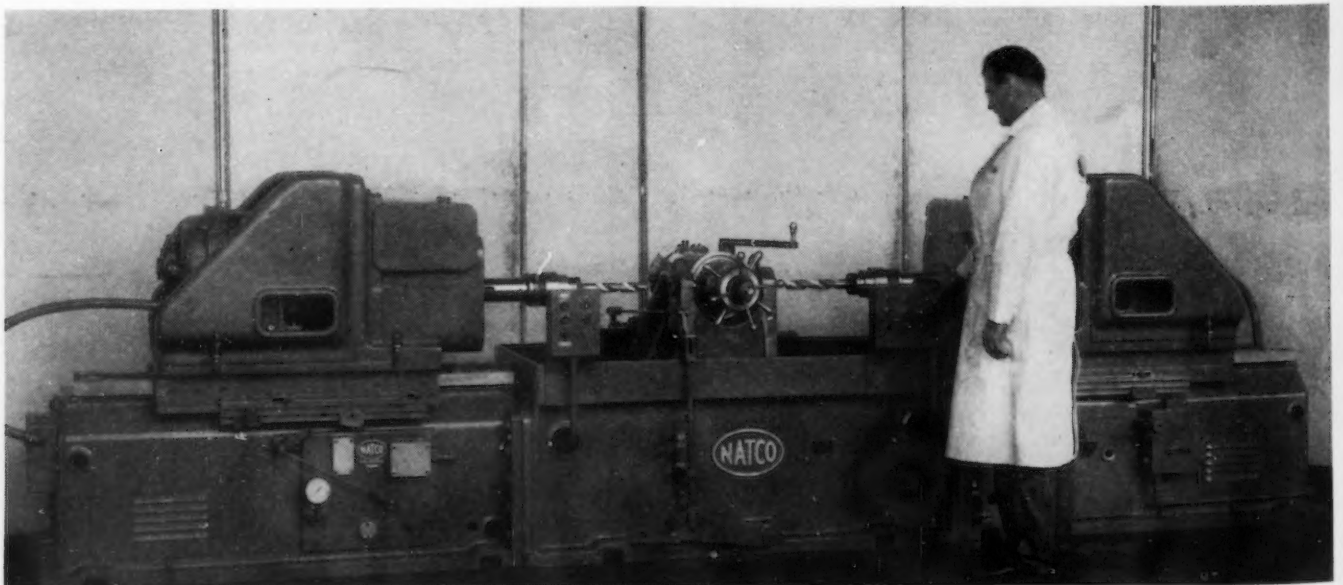
AT LEFT
FIG. 1—Aluminum alloy propeller blades, held in a stationary fixture, are fed down over the revolving cutters for drilling and reaming operations on the taper hole in the hub end.

A NUMBER of special-purpose units have recently been built by the National Automatic Tool Co., Richmond, Ind., for operations on aircraft propellers and engines. Fig. 1, for example, illustrates a Natco deep hole driller being used to drill, rough and finish ream the large tapered hole in the hub end of aluminum alloy blades for adjustable pitch propellers. This machine is equipped with a semi-automatic hydraulic feed, complete with automatic time delay reverse and positive stop,

AT RIGHT
FIG. 2—Sequence of operations for step drilling and reaming aluminum propeller hubs.



BELOW
FIG. 3—Two standard hydraulic feed unit heads have been adapted for drilling and reaming operations on variable-pitch propeller hub cams.



Set-ups for Aircraft Parts . . .

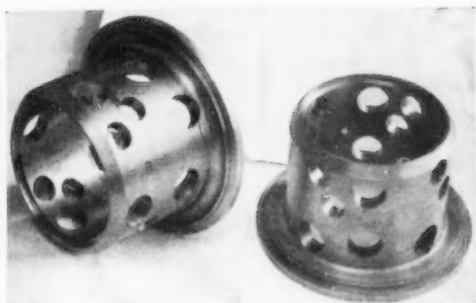
and second rate feed valve. Three sets of stop dogs, manually placed in the operating position, automatically control the lengths of the head travel.

traversing slide, which is rapid traversed down, then fed to depth and rapid returned. At the end of each cycle, the operator changes tools and

in step drilling shifts the dogs controlling the travel of the slide.

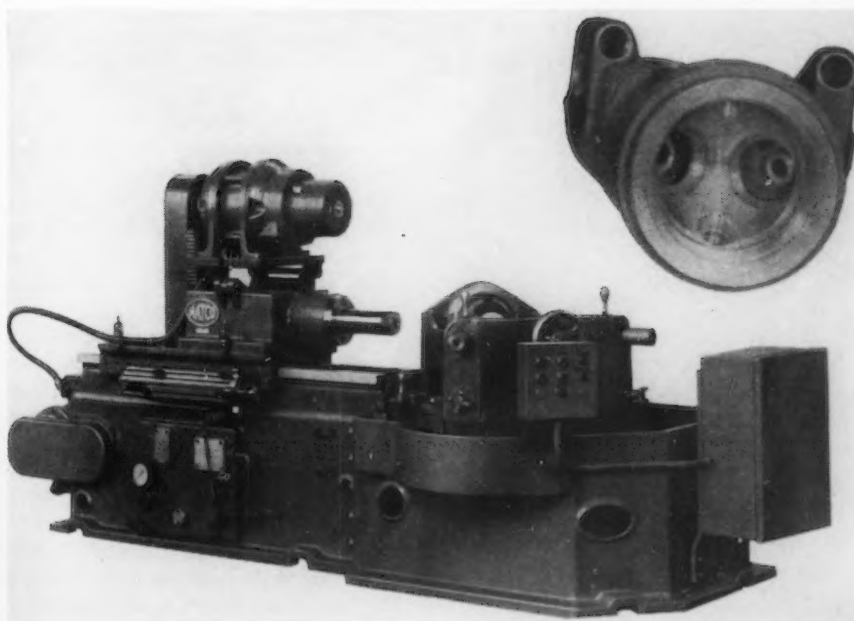
For drilling eight cam track holes and 12 weight reducing holes in the hub cams of variable-pitch propellers, Natco has adapted two of its single spindle Holesteel floor type units, Fig. 3, with a single indexing type fixture arranged to hold two different size hubs. This fixture has 10 radial locations and three different positions on the horizontal axis. The set-up is to drill two opposite holes, then index the fixture 90 deg. Reaming operations are performed on three of the holes by substitution of the proper tools.

In a third machine, Fig. 5, a Natco Holesteel floor type unit has been arranged with a special head containing a precision boring spindle for drilling, end cut boring, counterboring and line reaming operations on the valve seats and valve guide holes in aluminum alloy cylinder heads for aircraft engines. A two-position hand indexed fixture mounted on a steel base is used. One set of operations is performed with the fixture in one position. Sequence is shown in Fig. 6. The fixture is then shifted to the second position and a somewhat different set of operations performed. Operations 1 and 2 correspond to Nos. 2 and 3 in the first station; operation 3 is core drilling the valve guide hole, and operations 4 and 5 are identical with those in the first station of the fixture. One operator loads and unloads, shifts the fixture and changes the tools, maintaining a production of from 8 to 10 cylinder heads per hour.



AT LEFT
FIG. 4—In the propeller cam hub, 20 holes are drilled with the aid of a hand indexing fixture, shown in Fig. 3.

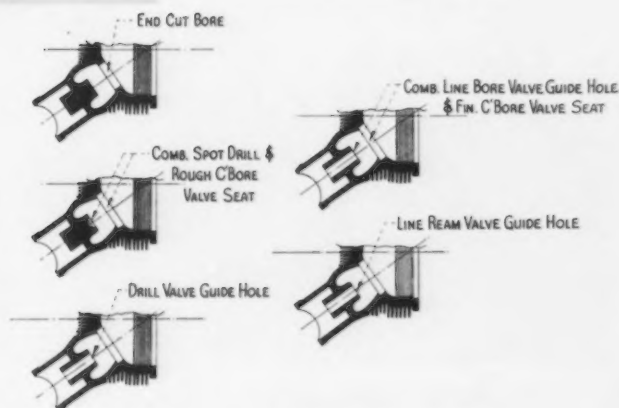
BELOW
FIG. 5—With a special precision boring spindle, 16 boring, drilling, counterboring and line reaming operations are performed in two positions on the valve seats and guides of aircraft engine cylinder heads.



Spindle speeds can be changed to suit the particular tool being used. The machine spindle proper is hollow and is arranged for supplying cutting lubricant to the tools, which are also provided with corresponding holes in the center.

Taper drilling is accomplished in two steps with special tools, followed by rough and finish reaming operations. The sequence is indicated in Fig. 2. The propeller blade is held in a stationary fixture mounted on the

AT LEFT
FIG. 6—Sequence of operations at the first station of the fixture shown in Fig. 5.



By W. R. BLAKELY

"THE term 'light steel construction' shall mean buildings in which the structural frame or its equivalent is built of light-weight rolled steel sections or sections formed from light gage flat-rolled steel sheets, or a combination of both used alone or in combination with other materials of construction."

This definition of light steel construction was written into a proposed uniform building code by a group of independent fabricators meeting in Los Angeles recently.

Under the classification of "sections formed from light gage flat-rolled steel sheets" the following method of construction has been widely used in the construction of one-story school buildings and commercial buildings and one- and two-story dwellings in southern California.

¹F. J. Bridget, C. C. Jerome, and A. B. Vosseller, "Some New Experiments on Buckling of Thin Wall Construction." A.S.M.E. Trans. (1934) APM 56-6.

This type of construction consists principally of pressed steel channels. With a few accessories, such as flats for roof connections and diagonal bracing, these channels constitute a complete framework for floors, walls and roofs. On this framework any floor, wall and roof covering materials may be applied.

In 1933, following the Long Beach earthquake, it was seen that a great amount of reconstruction work would be necessary throughout southern California. To reduce footing loads a steel channel wall framing was developed to replace heavy masonry filler walls and partitions. From this start the work naturally gravitated into bearing walls and then to floor and roof systems.

The engineering development of standard shapes was based on comparative studies of the following major points:

- 1—Architectural custom as to wall thickness.
- 2—Standard widths of steel sheets.
- 3—Economical shop practice.
- 4—Economical distribution of metal for members acting as columns.

In consideration of the first point it was thought wise to adhere as closely as possible to present standard

Light Steel Construction in Southern California

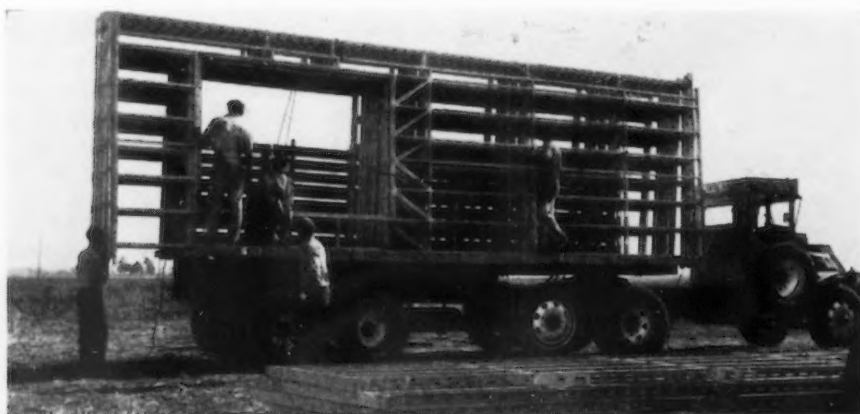
wall dimensions as used in 2 x 4 and 2 x 6 wood framing. Standard accessories such as cabinets, wall heaters, etc., could then be specified by the architect.

Since all members are sheared in the shop from standard sized galvanized steel sheets, the second point carried considerable weight. The goal set up was to cut from 30-in. and 36-in. sheets without waste.

Point three was a strictly local problem having to do with the available equipment of an already established steel products plant. The size of punch presses and power brakes and the cost of dies had a bearing on the finally adopted standard shop punching, gages of steel, and widths of strips after shearing.

Considerable research was done in connection with point four. Computations were made on numerous shapes and sizes to determine the most economical distribution of cross-sectional area for members with both gravity loading and combined gravity and wind loading. These studies were made on solid members and members with shop punching in web and flanges. Since the bolted connection adopted required a wide flange, studies were made to determine the minimum thickness of metal which could be used with a given width of flange. In this connection, valuable data were obtained from experiments made at the California Institute of Technology on long, slender angles to be used as aeroplane struts.¹ From these experiments and from tests made on studs fabricated under typical working conditions it was decided that a maximum width of flange of 20 times the thickness of metal could be termed good engineering practice.

The resulting standard sizes of studs decided on were 3½, 5, and 6½ in. channels with 1⅜ in. flanges in 14, 12 and 10-gage steel, and 1⅝-in. flanges in 12, and 10-gage steel. Smaller channels are used where needed in roof truss designs and up to 12-in.



TRUCKING wall panels. 10 ft. by 30 ft. to the job.



SIXTEEN roof trusses, each 34 ft. long, are an easy load for this truck.

ee Construction ern California . . .

channels used as floor joists. For non-bearing members, door and window frames and other trim, 16-gage is used.

Many tables and charts have been prepared to speed up the design of floor, wall, and roof systems, but the accompanying chart gives a comprehensive picture of the values of $3\frac{1}{2}$ and $6\frac{1}{2}$ -in. channels with $1\frac{3}{8}$ -in. flanges, standard shop punching in the webs, bolt holes in the flanges, and horizontal bridging spaced at 36-in. centers.

The following working stresses are used in design:

In tension, $f = 15,000$ lb. per sq. in.

In compression, $fc =$

$$15,000$$

$$1 + \frac{1}{15,000} \left(\frac{L}{R} \right)^2,$$

with the usual increase of $33\frac{1}{3}$ per cent for stresses due to wind or earthquake forces. Established structural steel theory is in general used in the design of all members, subject of course to the limitations established by the studies of thin metals.

Structural design consists of treating the studs as individual columns, stayed laterally in the weak direction by horizontal bridging at approximately 36-in. centers vertically. In light construction such as dwellings the roof members and studs are placed on the same spacing. In the case of flat roofs the roof trusses or joists are bolted directly to the studs and horizontal belt channels are bolted to the flanges of the studs to transmit horizontal forces to the diagonals. For pitched roofs the trusses are centered over the studs and bolted to a continuous horizontal plate member which serves the same purpose as the belt.

Studs and roof members are spaced to accommodate the wall, ceiling, and roof covering without the use of girts or purlins. Loads are carried over door and window openings by lintels composed of two plates, one on the outside and one on the inside of the

wall and bolted to the flanges of each intermediate stud. This forms a semi-box girder of exceptional rigidity.

In the case of flat roofs, the roof covering is utilized as a diaphragm to stiffen the structure, but for pitched roofs diagonal bracing is placed in the plane of the ceiling.

Partial assembly is included in the shop work. After shearing to the correct width the pieces are put through the punch presses for web perforations and bolt holes. They are then formed to the correct dimensions in the power brake and sent to the assembly room. Floor systems are assembled entirely in the field. Walls are assembled in the shop in sections approximately 10 ft. long by the full wall height. All connections are bolted, using a special flat head bolt and special nut with bolt holes shaped to fit. In this type of connection the small bolt is not subject to shear and the edges of the thin metal are not subject to bearing. A working stress of 500 lb. per $\frac{1}{4}$ -in. bolt was established by laboratory tests.

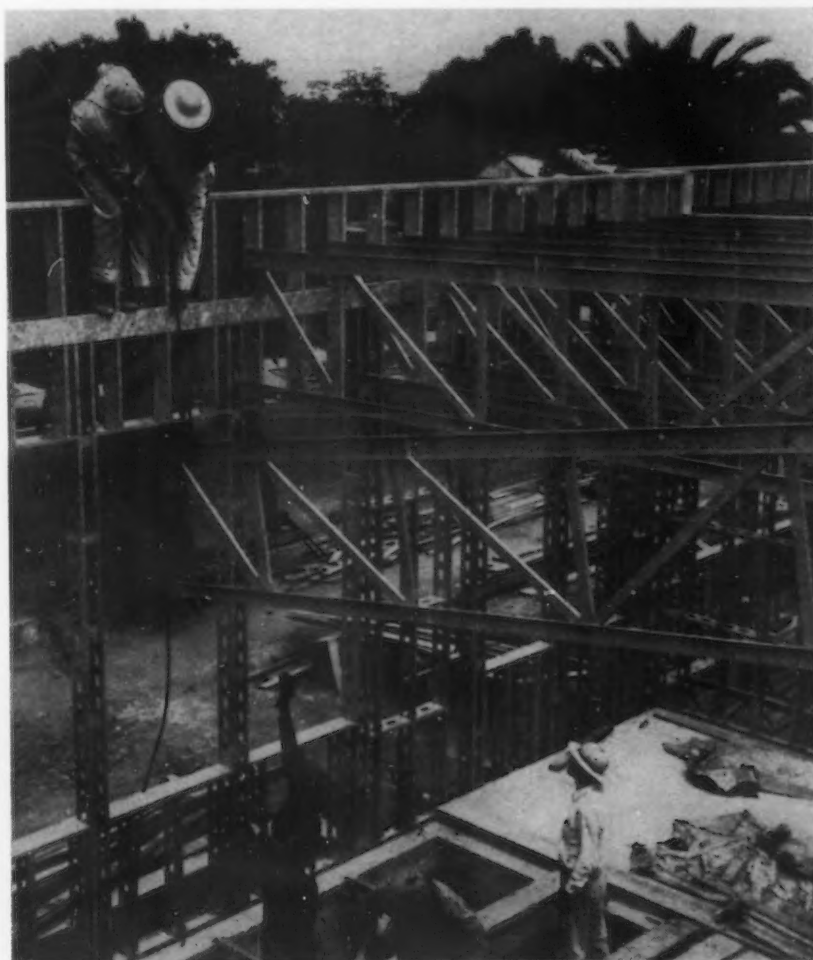
Trusses are assembled complete in

the shop. All the members are placed in a template and the required number of the special bolt holes are punched by hand. Common labor is used in all shop assembly work as the only tools needed are screw-driver and small wrench.

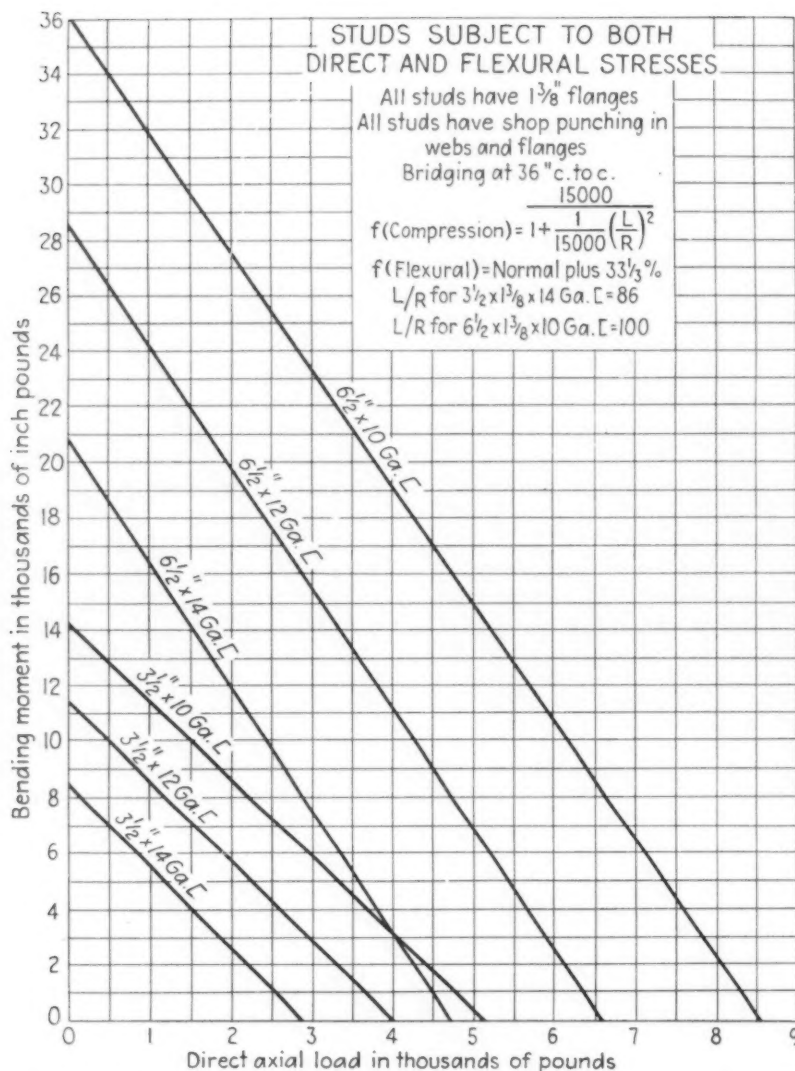
Field work starts with the setting of anchor bolts in the footings. This is usually done by the general contractor but the shop sends out a man to check dimensions before the concrete has set.

Size, rather than weight, is the important item in trucking the pre-assembled panels to the site. The wall framing weighs from 3 to 4 lb. per sq. ft. and a 10-ft. length of wall is easily handled and erected on the footing. Holes punched in the sill channel receive the anchor bolts, horizontal bridging is bolted to the panel previously set, splice pieces connect the sill channels, and overlapping pieces connect the wall plates or belt members at the roof line.

When the entire wall framing is erected it is gone over and plumbed, the anchor plates set inside the sill



FLAT roof construction for a school building.



VALUES of 3 1/2 and 6 1/2 in. channels of 10, 12 and 14 gage stock, as used for studs in the structural system described in this article.

channels and bolted down, and the diagonal bracing is applied. The diagonal braces are flats in pairs, one inside and one outside of the studs. They are bolted first at the plate line or belt member with one bolt so they are free to be lined exactly. Then they are slightly pre-stressed as they are bolted at the base to the special anchor channels. Full bolting is then finished at the top end and one bolt put through the flange of each stud. All bolting in the field is done with hand punches similar to those used in assembling trusses.

Floor joists are bolted directly to the studs, both being shop punched. Roof trusses are bolted to the wall plate or belt member by angle clips which are also shop punched. Diagonal bracing in the plane of the ceiling is applied similarly to the wall diagonals. Door and window frames are installed with angle clips and the building is ready for metal lath and plaster or other covering.

When metal lath or stucco reinforcing is used the flanges of all studs and ceiling joist are lanced at 6-in.



PITCHED roof framing showing steel trusses on 24 in. centers.

centers. The lath is hung on this lancing which is then cleated with a common hammer. Wall boards and the special metal wall and roof covering developed by the fabricator are attached with special clips.

Some criticism is usually heard, when a building is being erected, relative to the excessive flexibility or unstableness of the structure. The individual members are easily deflected and careful handling is required of long floor joist. But when the horizontal bridging is all in place the floor and roof systems have more rigidity than wood framing for similar structures. From this point on no more criticism is heard. Bridging is placed at from 4- to 6-ft. centers and the floor and roof covering are considered as staying the compression flanges at not more than 15 times the width of flange.

This type of construction has enjoyed a warm reception by architects and builders. No attempt has been made to sell an all steel building but rather a steel frame on which may be used any of the time honored coverings. An all metal, insulated covering is offered by the fabricator but even this is not considered when designing the frame of the building. Another reason for acceptance by architects is the fact that architectural design is not limited or affected by the structural material. Plans prepared for wood framing are not altered in any way for use with steel framing except for the addition of a sheet of structural details.

Steel tonnage varies from approximately 6 1/2 tons for a one-story dwelling of 1050 sq. ft. floor area to approximately 80 tons for a one-story school building of 11,000 sq. ft. This

THIS school building is an example of light steel-frame construction on a larger scale. The exterior will be stucco.



includes floor, wall, roof, and partition framing and door and window frames.

The cost of finished dwellings with this type of framing is from 5 to 8 per cent more than a similar building with wood framing when only one building is made from one set of plans. Repetition, however, eliminates

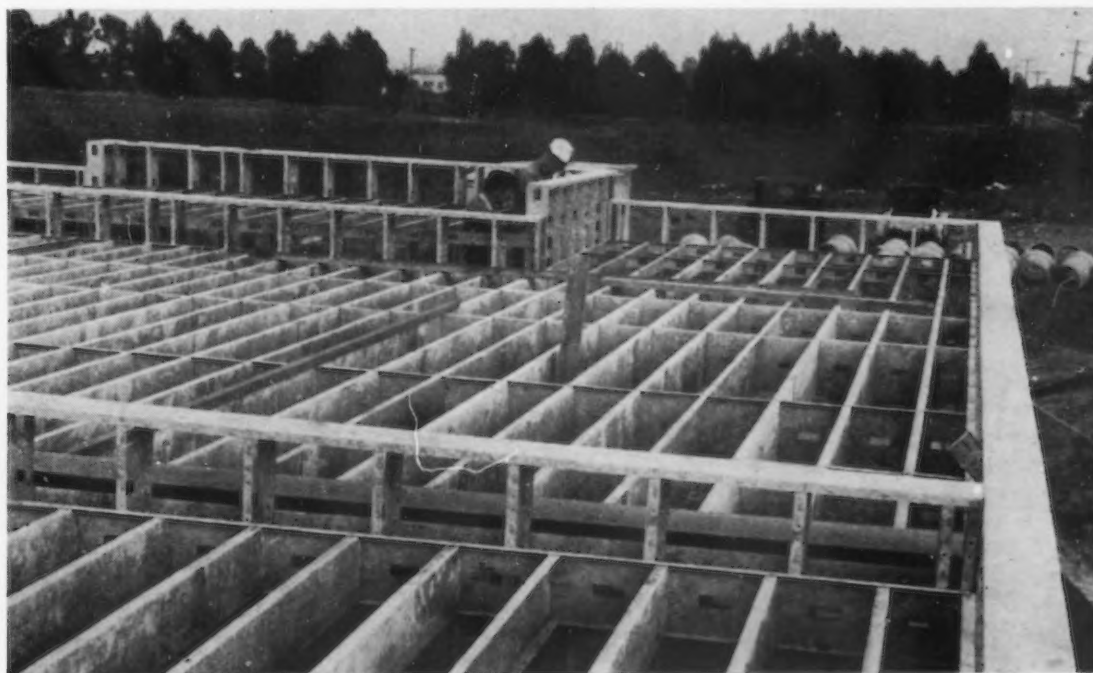
engineering and shop listing and brings the cost down to approximately the same as wood framing.

W. C. Lea, Los Angeles, is the fabricator of this material and the writer has done all of the engineering investigation and design.

The writer wishes to express his indebtedness to Hans Christie, struc-

tural engineer with Columbia Steel Co. and to F. M. Ropp, structural engineer, Los Angeles, for their help in checking theory and computations; also to C. H. Kromer, principal structural engineer, and his associates in the California State Division of Architecture for their valuable constructive criticism.

DIAGONAL roof sheathing will be laid upon this steel flat roof framing.



Newer and Better Products of the

IN an unending procession come the brain children of the machine tool designers, which when translated into steel and cast iron increase the obsolescence factor of existing machinery. Announcements from the build-

ers received in the last month include new types of machines in practically all general classes of equipment. A number of auxiliary devices for machine tools are also described and illustrated.

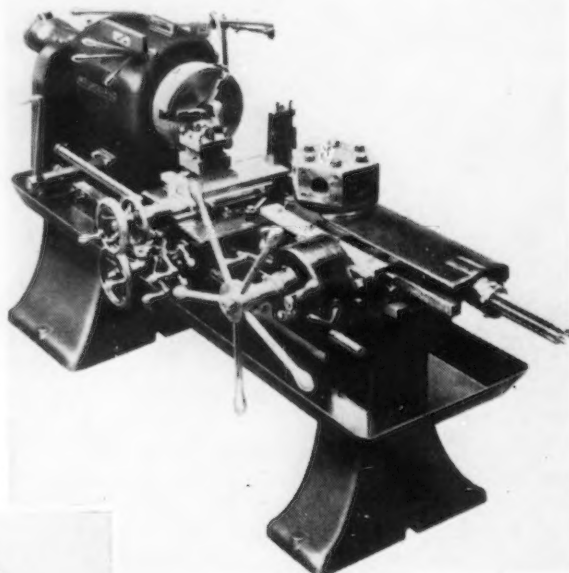
BY means of a combination push and pull lug, the new type T vertical hydraulic broaching machine, made by the *American Broach & Machine Co.*, Ann Arbor,

Mich., can be used in three ways: as a push down unit for internal broaching, pressing and assembly work; as a pull down machine for internal broaching; or for surface broaching.

As in other "American" machines, the hydraulic cylinder is built integral with the ram, which is guided in hardened and ground steel ways in the machine column. With this design, a stroke of 24 in. is obtained with relatively low column height. The combination push or pull lug may be attached to either the top or the bottom of the slide, to which surface broaching tools may also be attached. Work table rest plates are interchangeable for various types of broaching operations.

The hydraulic pump unit is of Sundstrand make and is mounted in the hydraulic oil reservoir in the base. Two controls are used, one on each side of the machine, and the operator must have both hands on the levers for starting the machine on the broaching stroke. Only one lever is required to initiate the return stroke, however. The machines come in two sizes of 4- and 6-ton normal capacity, with 4 and 5 in. cylinder diameters, respectively. Rest plate dimensions are 16 x 8½ in.

AT RIGHT
MILLHOLLAND'S No. 4 universal turret lathe is a hand operated machine with the turret slide actuated by a turnstile rack and pinion.



BELOW
THE American type T hydraulic broaching machine can be used for internal broaching by either the push down or pull down methods or for surface broaching, as well as general press work.



AT RIGHT
WORK on the Ex-Cell-O No. 31 precision thread grinder is driven directly from the master lead screw without intermediate gears, and hence no lead compensation is required.



Drilling Machines

NO. 18 is the name given a new line of drilling machines developed by the *Buffalo Forge Co.*, Buffalo, since there are 18 different models available. There are production types and standard table types with options of head raising device, foot feed and table raising screw or

Machine Tool Builders

By FRANK J. OLIVER
Associate Editor, *The Iron Age*

combinations thereof, and 2, 3, 4 and 6-spindle production base types. When powered with $\frac{3}{4}$ -hp. motors, the machines are capable of drilling 1 in. holes in cast iron.

Spindles are heat-treated chrome-nickel steel, mounted in precision ball bearings, the lower one a double row bearing to carry the drill thrust. Provision is made for adjusting the spindle bearings and also for the frame bearing. Drive from the vertically mounted motor is by step cone pulleys and V-belt. The drills are moderately priced.

Turret Lathe

THE new No. 4 universal turret lathe made by the *Millholland Sales & Machine Co.*, Indianapolis,

has 12 spindle speeds available through three levers on the headstock (range 24 to 600 r.p.m. or 40 to 1000 r.p.m.). All gears are mounted on spline shafts, carried by ball bearings. The spindle is carried on a double row Timken bearing at the front and a ball bearing at the rear. Automatic chuck and bar feed are extras.

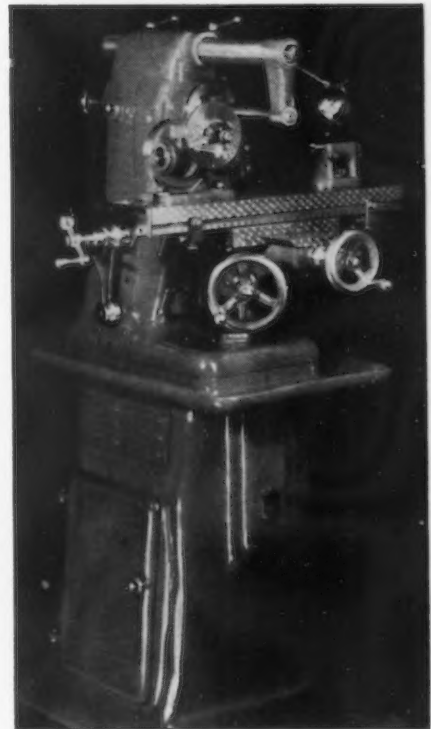
The universal carriage is provided with both cross and longitudinal feed and there are six feed changes available in the apron and six in the headstock. A square turret tool post is provided. The turret slide is operated by a turnstile rack and pinion. The hexagon turret revolves on a hardened steel seat to which it is clamped by means of the turnstile handle. The turret saddle has six feed changes in the apron and an additional six through the gear box at the headstock. Turret feed is engaged by friction clutch, and feeds are automatically tripped by independent adjustable stops.

Small Precision Miller

THE preloaded ball bearing spindle construction featured in the new precision milling machine for toolroom and laboratory use, recently announced by *Hardinge Brothers, Inc.*, Elmira, N. Y. Through a two-speed motor in the base and four-step cone pulleys with V-belt, eight reversible spindle speeds are available, from 110 to 1850 r.p.m., or special high speeds up to 2500 r.p.m. A solid steel overarm, 2 in. in diameter, supports the spindle. Arbors from $\frac{7}{8}$ to 1 in. may be had. Regular equipment includes micrometer index feed screws and pedestal drive complete with motor and controls. Table has a working surface of 20 x 6 in., with $13\frac{3}{4}$ in. longitudinal feed; 6 in. traverse, and 7 in. vertical movement.

Grinders

A BUILT-In taper grinding attachment is among the improvements to be found in the series No. 31 precision thread grinders made by *Ex-Cello-O Corp.*, Detroit. A bracket is fastened to the table with a set of rollers contacting cam plates for various taper angles. The grinding wheel head assembly is caused to move on its slide at right angles to the work

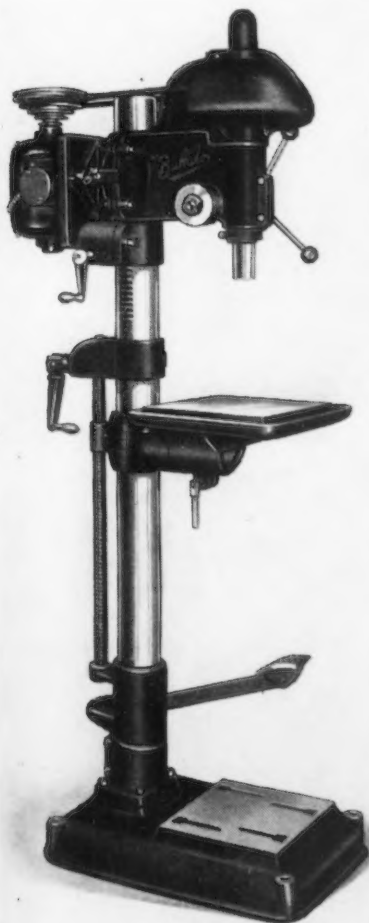


PRELOADED ball bearing spindle is featured in the Hardinge precision milling machine for the toolroom and laboratory.

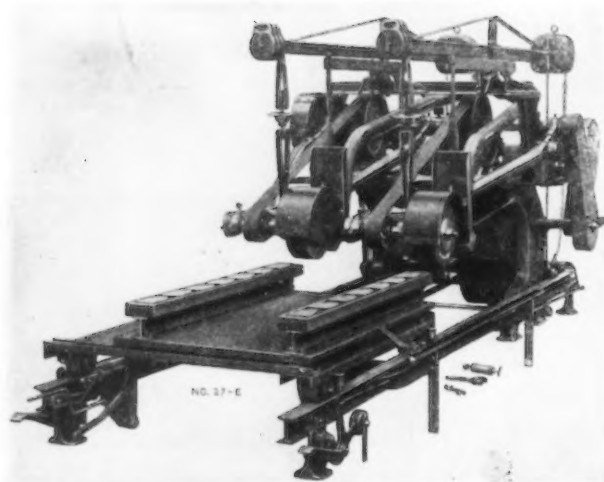
axis. Another feature is manually operated wheel dressers, designed to operate without slowing down the wheel and to reduce wheel wastage.

By means of two-step interchangeable pulleys for both wheel and motor spindles, a given surface grinding speed can be maintained for any wheel size from 12 to 18 in., in increments of 1 in. The workhead, now equipped with Ex-Cell-O precision bearings, is driven from a two-speed motor through worm gearing. Eight spindle speeds from 6 to 60 r.p.m. are provided by four-step pulleys. Complete electrical control is provided by push buttons, which give fast or slow table feed in either direction, and provision is made for handling either right or left hand screws.

TO replace earlier types, the *Excelsior Tool & Machine Co.*, East St. Louis, Ill., has designed the No. 27-E high speed electric iron sole plate grinding and polishing machine. It has two grinding wheels, grinding the full width, and mounted on over-size ball bearings. An oscillating mo-



BUFFALO No. 18 drilling machines are supplied in 18 different combinations. This is model No. 18-A, a production type with head raising device, foot feed and table raising screw.

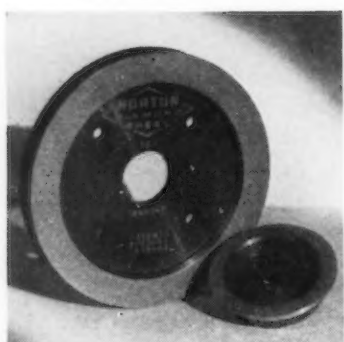


o o o

AT LEFT

REMOVING the scale and sufficient metal to obtain a clean, smooth, straight surface on electric iron sole plates prior to plating is being performed on the new No. 27-E Excelsior automatic grinding and polishing machine.

o o o



A NEW type of diamond wheel embodying the use of a metallic bond is being offered by the Norton Co.

tion to the carriage prevents line scratches and unequal wear to the face of the wheels. Drive is by multiple V-belts from a jackshaft driven by a 15-hp. motor.

For 14 in. diameter high speed grinding wheels, the spindle speed is 2500 r.p.m., and the carriage travel is 30 ft. per min. In the machine shown, seven sole plates $4\frac{1}{2} \times 7\frac{1}{2}$ in. are mounted on each carriage, and approximately 200 castings are ground and finished per hr.

Diamond Wheel

TO supplement its line of diamond wheels, the Norton Co., Worcester, Mass., has developed a new type of wheel in which the diamonds are embedded in solid metal. The metal used is a special alloy that is said to hold the diamond particles securely, yet allows enough wear to keep the wheel free-cutting. Wheels are made with the entire rim one homogeneous piece, thus eliminating any joint between the diamond impregnated grinding surface and the balance of the rim that might cause premature breaking away of the abrasive material. In

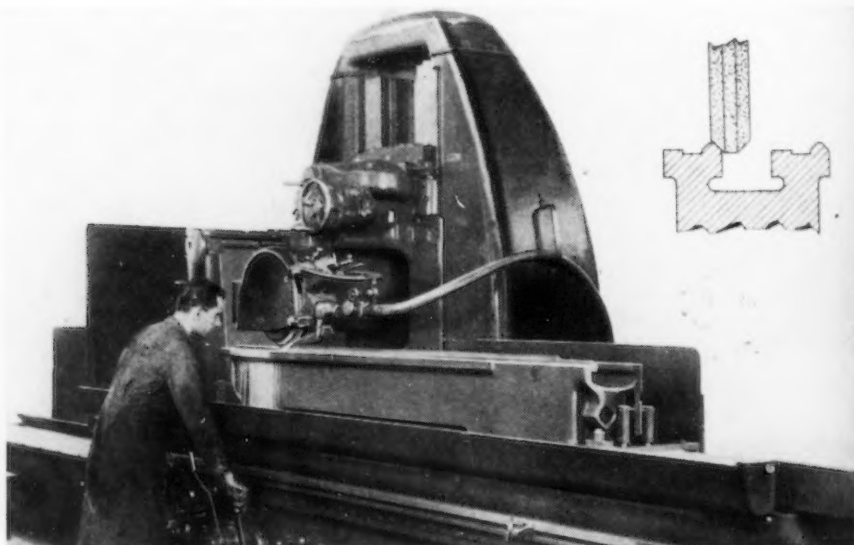
some styles, such as those used for cut-off operations, the entire wheel is one homogeneous piece of metal. Preliminary tests show that the diamonds

are held longer, the corners of the wheel stand up better, and the wheel is not damaged by the heat of grinding.

Pipe Threading Machine

THE Landis $4\frac{3}{4}$ -in. receding chaser pipe threading and cutting machine is a recent addition to the line of the Landis Machine Co., Waynesboro, Pa. It has a capacity from $1\frac{1}{8}$ in. o.d. to $4\frac{3}{4}$ in. o.d. and will generate a tapered pipe thread of any length up to 5 in. The die head is graduated and has universal adjustment for size. In addition, there is a micrometer adjustment for extremely accurate setting. Both roughing and finishing cuts can be made without any diametrical adjustment of the die head.

Forward movement of the die head is controlled by means of a coarse pitch leadscrew, with pitch change



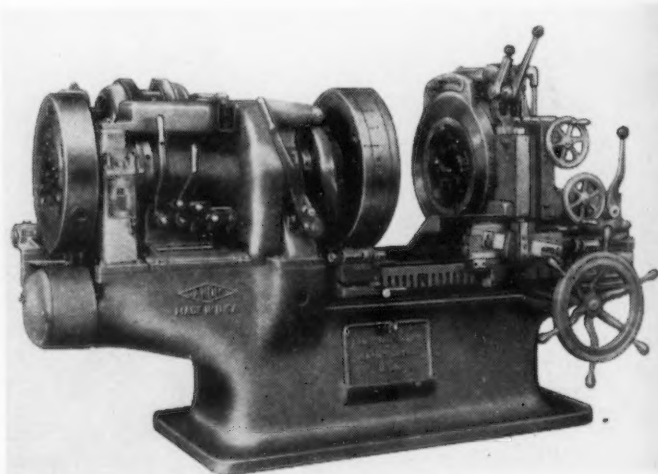
FLAME hardened Monarch lathe ways are ground in this 24 x 30 x 144 in. high powered precision surface grinder built by the Mattison Machine Works, of Rockford, Ill. A wheel truing device mounted on the wheel slide permits truing both angles of the wheel for grinding V-ways. Flat ways are ground in the conventional manner without prior scraping. Flame hardening is done after the finish planing operation.

o o o

AT RIGHT

THE Landis $4\frac{3}{4}$ -in. receding chaser pipe threading and cutting machine will cut all tapers regularly used for plain pipe, oil well casing, tubing and drill pipe.

o o o



gears provided to take care of different thread pitches. Taper is controlled by a sine bar, which can be quickly adjusted, and its holding bracket can be adjusted axially in relation to the pipe. There is ample provision for coolant directed to the cutting edges of each chaser.

THE Oster Mfg. Co., of Cleveland, has announced a pipe vise stand equipped with a power unit and chuck to enable threading, cutting and reaming to be done by power with conventional hand tools on all sizes of pipe up to 2 in. The power is furnished by a 110-volt universal, variable speed Black & Decker motor, geared to the scroll chuck spindle and giving speeds from 14 to 32 r.p.m. The power unit is concealed in the upper part of the stand holding the pipe vise. Arms built into the stand take the torque of the handles of the tools when the chuck is revolved.

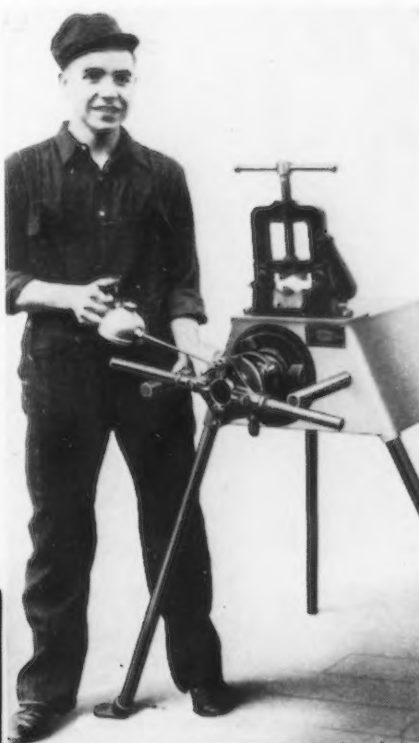
BELOW

THE newest and largest of the Continental Doall contour sawing machines, model ML, will cut dies 10 in. thick, but the speed range makes it also useful for cutting sheet metal or plastics.



Without the legs, which are removable, the stand weighs 110 lb.

MODEL B pipe and bolt threader offered by Beaver Pipe Tools, Inc., of Warren, Ohio, is a portable machine with capacity to cut, thread and ream nine sizes of pipe from 1/8 to 2 in. diameter. It can also be arranged with a drive shaft and geared



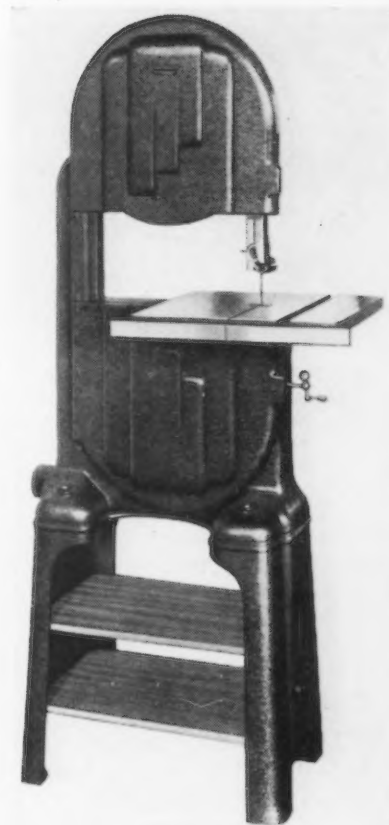
OSTER'S motorized pipe stand is shown threading 2-in. pipe with receding type stock and dies.

tools to cut and thread up to 12 in. pipe. It will cut off solid bolts up to 1 in. and will thread 2-in. bolts. Die heads are interchangeable.

This machine may be purchased in units, starting with the simple Model B power drive and adding auxiliary attachments. Base of the unit measures 27 1/4 x 13 1/8 in. and the unit is 20 1/2 in. high. Weight, 325 lb.

Sawing Machines

SAWING capacity 50 per cent greater than in previous models is found in the new model ML Doall contour sawing machine, made by Continental Machine Specialties, Inc., Minneapolis. It accommodates work 10 in. in thickness and has 16 in. throat capacity. The guide post



MODEL W Yates-American band saw comes in 14 and 16-in. sizes and is intended for light industrial use.

is now 1 1/2 x 1 in. in section, and a heavy duty screw feed attachment is provided. Through a 30-to-1 Speed-master variable pulley unit, saw speeds of 50 to 1500 ft. per min. may be obtained, making the machine suitable for production work in nonferrous metals, plastics and sheet metal, as well as for work on heavy dies of alloy steel.

A feature of the construction is that the housing is entirely arc welded, and except for the transmission cover, is in one piece. Anchor plates for the essential sub-assemblies are pre-machined, then welded to the housing. Table is 24 x 24 in. and tilts in four directions.

FOR light industrial work and for vocational schools, the Yates-American Machine Co., Beloit, Wis., has added a 14 and 16-in. bandsaw to its line of W machines. The bandsaw is available as a bench or floor type, and with a belted motor or belt drive. The frame is cast in one piece and the wheel guards are hinged. The nickel alloy cast iron table tilts 45 deg. right and 5 deg. left. The top saw guide carries a steel guard which covers the saw in all positions. Regu-



THE Beaver model B portable pipe and bolt threading and cutting machine has a simplified oiling system. Capacity up to 2-in. pipe.

lar equipment includes a cast iron, double faced rip fence with micrometer adjustment and table extension arms for increasing the cut-off capacity.

Cap Screw Trimming Machine

AMONG the many types of special machines built by the *Langelier Mfg. Co.*, Providence, is a horizontal four-spindle continuous cap screw trimming machine for finishing the heads of socket head cap screws after the heading operation. The entire carrier revolves with four collet type chucks, having interchangeable pads for handling No. 8 to 5/16 in. screws. The pieces are hand loaded, but are ejected automatically. Production rate is from 1000 to 1500 screws per hr.

Three motors are used on the machine; one for driving the spindles, a second for driving the carrier and a third for the coolant pump. The spindles revolve on Timken bearings and are braked at the loading position. A fixed cam operates the cutter levers.

Coolant Tanks

A NEW series of self-contained coolant tank and pump units has been brought out by the *Pioneer*



Engineering & Mfg. Co., 31 Melbourne Avenue, Detroit. Five sizes are available, having capacities from 1 to 80 gal. per min. and pressures up to 23 lb. or 53 ft. of head. The H



AN overarm support is employed for the dial in the No. 21-H heavy duty marking machine, a recent development of the *Noble & Westbrook Mfg. Co.*, of East Hartford, Conn. So that heavy pressure can be exerted to produce a mark 0.020 in. deep on two roller bearing rings at a time, the work supporting mandrels are held tightly in the carrying dial by means of lock nuts, and the bushings are mounted in needle bearing, s.

models have the pump mounted in a compartment below the tank bottom, whereas the model V units have the motor mounted on the stationary part of the tank cover, with the pump immersed in the coolant. Cast iron cov-

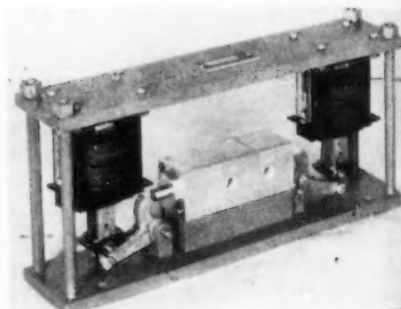
AT LEFT

THE model V Pioneer self-contained coolant tanks can be arranged with either a chip basket or a bag filter for suspended solids.

o o o

AT RIGHT

THE Langelier horizontal four-spindle continuous cap screw trimming machine was built for trimming the heads of socket type cap screws.



THIS double solenoid, four-way, high speed air control valve for 1/8-in. pipe connections is suitable for control of air cylinders not over 3 in. in diameter. A product of *C. B. Hunt & Son*.

ers of the former are equipped with a replaceable strainer, while the covers of the latter are arranged for use with either a chip basket or a bag filter to remove foreign matter held in suspension. Chip baskets are regularly furnished with a 20-mesh screen. Tanks are welded steel.

Small Air Valves

SOLENOID control valves for the operation of air cylinders not over 3 in. in diameter and correspondingly short stroke, in 1/8-in pipe size only, have recently been brought out by *C. B. Hunt & Son*, Salem, Ohio. They can be furnished for two, three and four-way operations, and are suitable for air pressures up to 200 lb. G-E 290-D solenoids are used, having low amperage characteristics. The valves can be supplied normally closed or normally open.

As in other Quick-as-Wink valves made by the company, there is no metal-to-metal contact. A stainless steel plunger is the only moving part. An increase in air pressure tends to tighten the air seal and thus prevent leakage. Solenoids are energized only at the time the valve is actuated.

Magnaflux

Inspection of Gas Cylinders

• • •

THE degree of importance of the hidden physical defects in steel parts bears some relation to the service that the part is expected to render. However, the world's leading metallurgists and physicists are agreed that the presence of discontinuities of the most incipient type can lead to serious conditions, particularly if the part is subject to dynamic stress.

Magnaflux provides an efficient method for the detection of such flaws, a method that is non-destructive and rapid. This detection is simply and easily applied either to the original stock, whether rolled, forged or cast, or at any stage of a manufacturing operation. Finished parts can readily be examined without the slightest injury to the finish, even if the parts have been polished or plated with metallic coatings, such as cadmium, chromium, nickel, copper, zinc, etc., as a final manufacturing operation. This applies equally to lacquered or painted surfaces. The Magnaflux inspection method is not applicable to non-ferrous materials or to austenitic steels such as the 18 and 8 stainless type, but, otherwise, it can be used to inspect the entire iron and steel group.

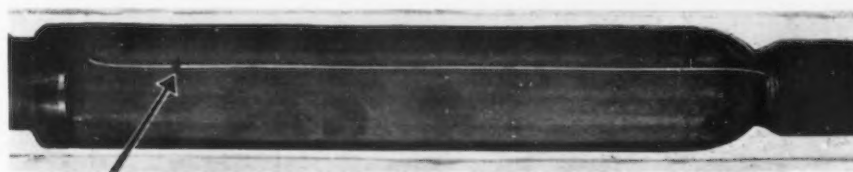
Magnaflux recently has been used with considerable success in testing cylinders used for storing and transporting compressed and liquid gases, primarily in the examination of welds and the base metal, on both used and new containers.

The inspection of cylinders in service is accomplished without removing

the paint from the surfaces of the cylinders, thus providing for a rapid and frequent inspection at a minimum expense. It is necessary, however, that the contactors of the instrument cut through the cylinder paint.

The magnetizing unit for the inspection of cylinders is a transformer equipment operating on either 220 or 440 volt a.c. The single power line

contains an exterior defect, such as a lap, seam, closed-in-draw marks, slag inclusion, or any other discontinuities, these will be indicated by a collection of the gray powder along the line of defects, as shown in the accompanying photographs. The time required for the complete handling and inspection of a cylinder varies somewhat but, depending on conditions, from 60 to 120



A LONG closed-in "draw" mark is revealed in a compressed gas transportation cylinder. The flaw is the long thin white line, and the arrow points to a spot which has been filed to determine the depth of the fault.

connected to a main switch on the unit furnishes the necessary power to produce the magnetic field in the cylinder, operate the motor for rotating the cylinder and supply the lighting current for the inspection lights.

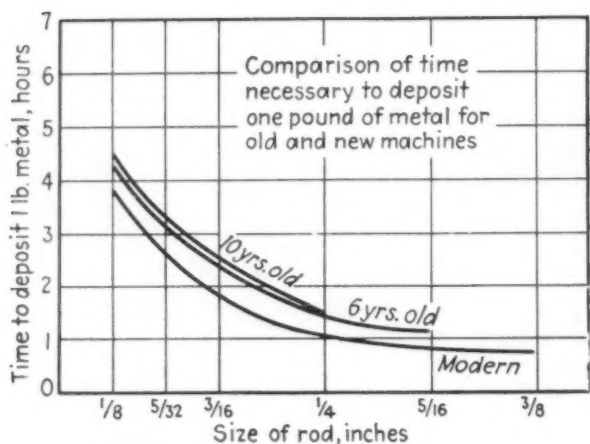
Defects, if present, will be revealed through several coats of paint, rust or scale. The surface, however, must be dry. Therefore, moisture or other substances, which would interfere with the free movement of the powder, must be removed.

The cylinder rotates slowly, at approximately two revolutions per minute, permitting the inspector to make a careful examination. If the cylinder

cylinders per day may readily be inspected.

The power consumed in operating the unit is negligible, being less than 8 kw.-hr. per day. Approximately one pound of Magnaflux powder is sufficient for the inspection of 100 to 150 cylinders.

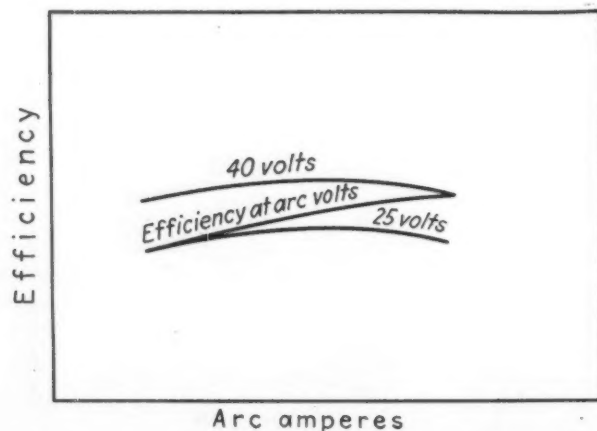
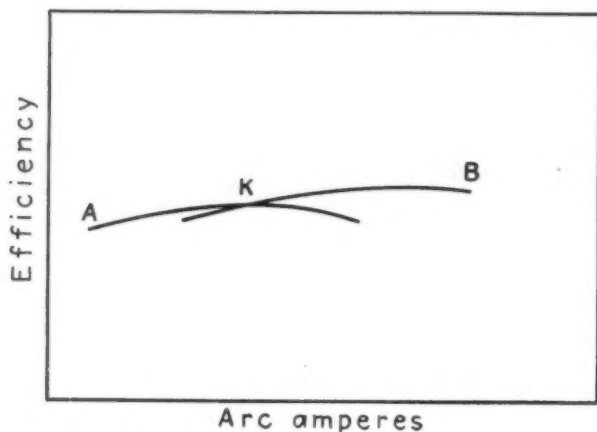
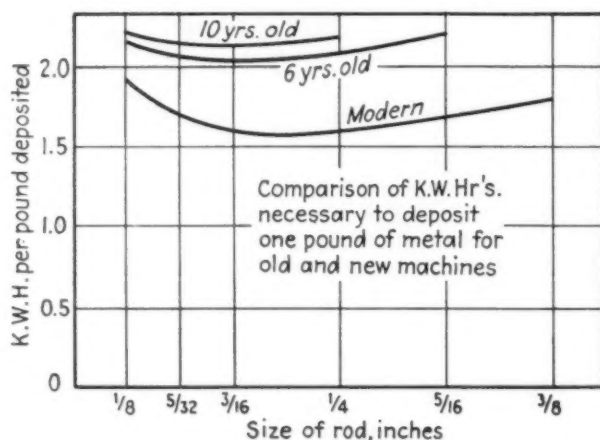
The type of inspector employed for Magnaflux inspection usually requires no greater skill than that of the careful employee engaged in regular methods of inspection. The magnetizing units are of rugged construction and may be transported from one plant to another if desired, and they require only normal attention and care.



ABOVE
AND AT
RIGHT
FIG. 10

BELOW
FIG. 11

BELOW
AT BOTTOM
FIG. 12



Factors in Low Cost

THIS concluding part of Mr. Smith's article includes development of a general curve from which the cost per foot of weld may be conveniently determined.

The previous part, in THE IRON AGE of June 30, dealt with cost of preparation, labor and electrode cost factors.

THE deposition of metal involves the use of power and it is with this item that we are next concerned. Power is supplied by welding generators, driven usually by electric motor and it is this kind of set that will be used in illustrating power costs.

To keep costs down the most modern generators available should be used. The accompanying curves show results of tests made on generators of different sizes, and the results are proof positive of the economy of using a modern generator. (See Fig. 10.)

The above general statement is

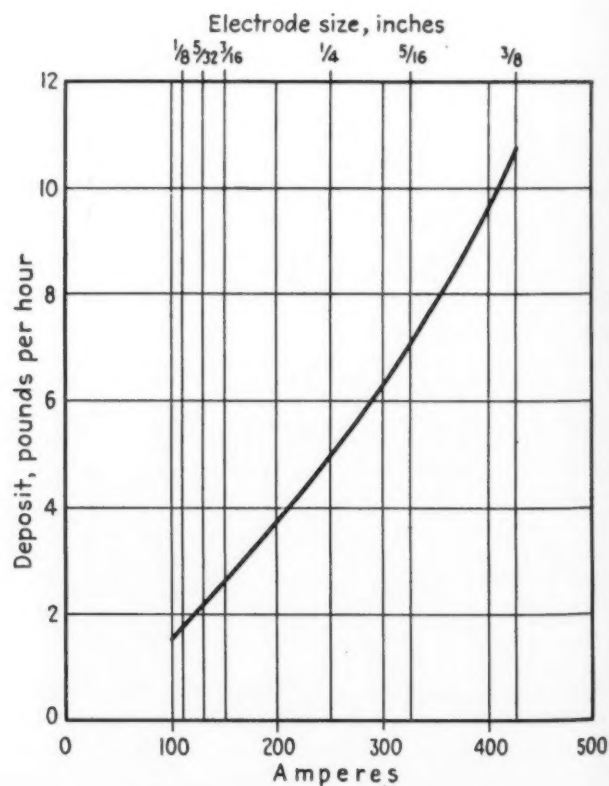


FIG. 13—DEPOSITION CURVE

Manufacture of Welded Products--II

supported by the following test data. The length of weld is 896 in.

	40-Volt Generator (New)	25-Volt Generator (Old)
Actual welding time, min.	126.3	177.6
Kwhr. input per seam...	22.3	24.8
Power cost, 100 in. weld..	\$0.020	\$0.022
Inches of weld per rod...	7.7	6.6

Next is the selection of the size of generator. For this it is necessary to know the application—that is, the

er machine result in operation at a point of high efficiency.

It is necessary, however, that this efficiency be that at the arc voltage and amperes. Usually efficiencies are given at 40 volts. As for example:

Amperes	120	200	300	400	500
Efficiency, 40 volts, per cent	60	64	65	64	61
Usual arc volts	25	28	32	37	40

If the efficiencies are known at 25

By E. W. P. SMITH

Consulting Engineer, Lincoln Electric Co., Cleveland.

o o o

volts as well, then an operating efficiency curve (Fig. 12) may be plotted.

Another curve of interest and use is a curve on deposition. Assuming a $\frac{3}{4}$ deposition factor and 100 per cent operating factor, then from Table A of the previous article:

Amperes	110	130	150	250	325	425
Deposit, lb. per hr.						
(100 per cent operating factor)	1.74	2.2	2.64	5	7.14	10.8

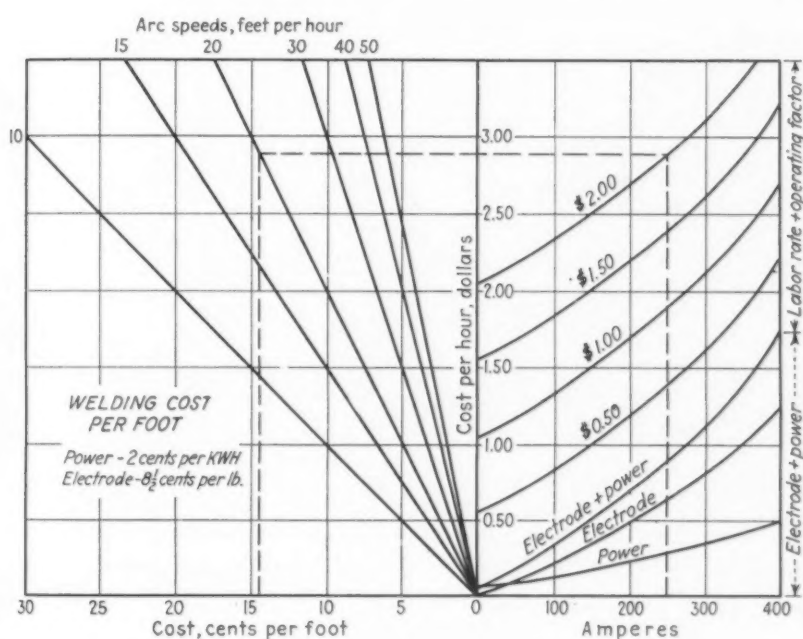
Some very interesting and useful facts can be obtained by combining this last curve and the tabulation given.

If the 25 volt efficiencies are not known the efficiencies at arc voltage may be calculated approximately as follows:

Amperes	120	200	300	400	500
Kw. output at 40 volts	4.8	8	12	16	20
Efficiency, 40 volts, per cent	60	64	65	64	61
Kw. input at 40 volts	8.0	12.5	18.4	25	32.8
Arc volts	25	28	32	37	40

(40-arc volts) \times amps. 1.8 2.4 2.4 1.2 ..
1000
Kw. input at arc volts. 6.2 10.1 16 23.8 32.8

(CONTINUED ON PAGE 55)



ABOVE
FIG. 14

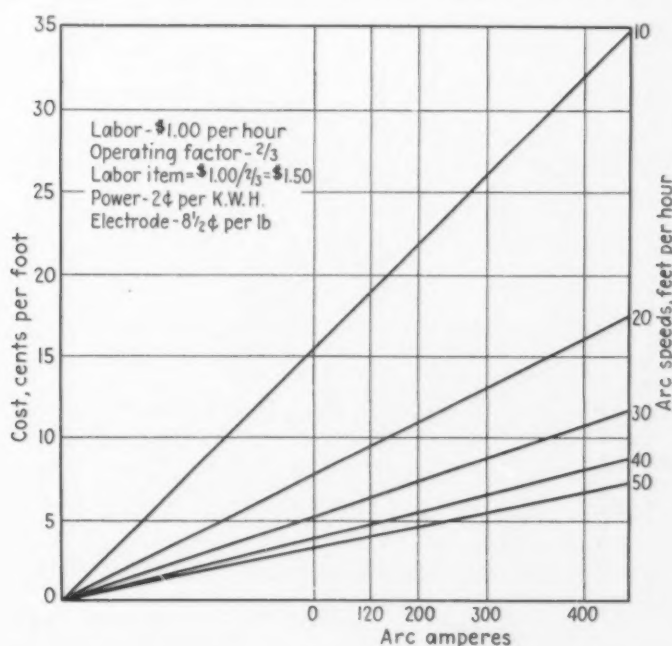
size and type of joints, plate thicknesses, not only as to dimension but also the percentage of total shop production for each. These plate thicknesses can be expressed in terms of welding as arc amperes.

It is obvious that generators of different sizes have different efficiency curves and that these curves cross. (See Fig. 11.)

If the greater part of the work is done to right of K, then B or larger size is used, as it is the most efficient. It is well to recall here that large electrodes result in reduced cost and larger electrodes require higher currents which are obtained at higher efficiencies.

In calculating power costs, efficiency is the governing item and the larger electrodes operating on a large

AT RIGHT
FIG. 15



THIS WEEK ON THE

By W. F. SHERMAN
Detroit Editor

ASSEMBLY LINE

... Auto production returns to 40,000 level for week
... Hand-to-mouth buying decreases in Detroit ...
Chrysler to use synthetic paint on 1939 bodies ... New
"weather tunnel" put into operation by Ford; Chrysler
opens wind tunnel.

DETROIT.—A return of production to the 40,000-car-a-week level, improvement in auto sales outlook for early fall, and encouraging changes in the industry's buying have been noted in the last week.

Resumption of production by Ford after a week's shutdown and moderate lengthening of production schedules by some producers will boost production again this week to about 40,000 units. As predicted a week ago, the Ford shutdown on the Fourth of July holiday brought the assembly totals down sharply during the week of the Fourth. According to Ward's Automotive Reports, 25,375 units were assembled last week, compared with 40,945 the previous week and 100,031 in the corresponding week a year ago. Ford's only assemblies during the week of the Fourth were at the Canadian plant and amounted only to 1600 units.

Conclusions that there are better prospects for automobile sales next fall are pretty general among automotive men who base their opinion on three current factors. First, there is the general business improvement being experienced now. Second, used car stocks are showing signs of marked depletion in many metropolitan areas, which will mean better prices for the used cars, and also will improve the dealers' chances of selling new cars, since it is generally conceded that a glutted used car market acts against new car sales. The third reason for expecting better automobile business in the fall is the fact that the auto designers have gone a long way toward giving the new models eye appeal that will attract the customer.

No one can overlook, either, the strong probability of price cuts in view of the sizable reductions that have been effected in material cost,

particularly since the steel price reductions have gone into effect.

Parenthetically, an indication of the size and scope of the used car industry is given by William E. Holler, general sales manager of Chevrolet. "June total sales of used cars were 123,701 (for Chevrolet) and it is the 40th month that Chevrolet dealers exceeded the 100,000 mark," he said. "It brought the 1938 total to 725,086 and the grand total for 40 months to 5,732,819." It has been estimated that the used car business in the United States has an annual turnover of approximately \$2,000,000,000.

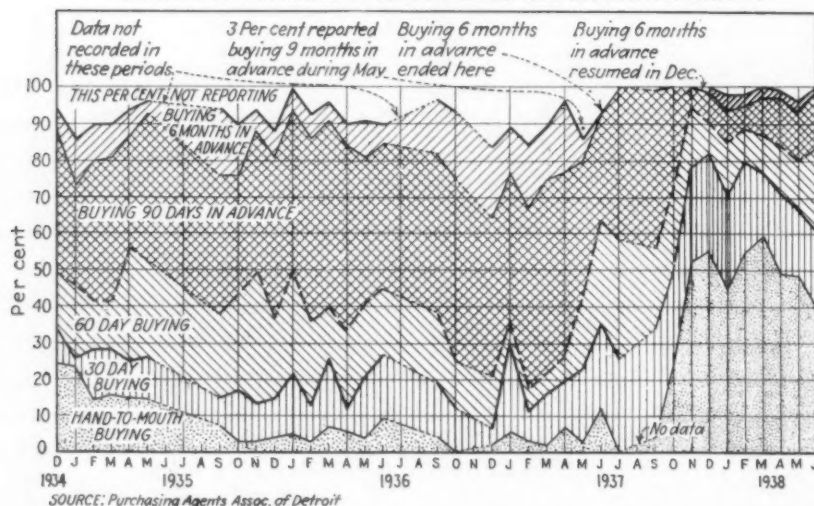
Steel Buying Expected Soon

The improvement in buying activity indicated above has not yet been felt by steel. From the viewpoint of the automobile industry, this is natural. The requirements for 1939 models are only being formulated now and probably inquiries will not be seen in volume for another week. Before the end of July, however, it is expected that much of the initial steel requirements will be placed on order.

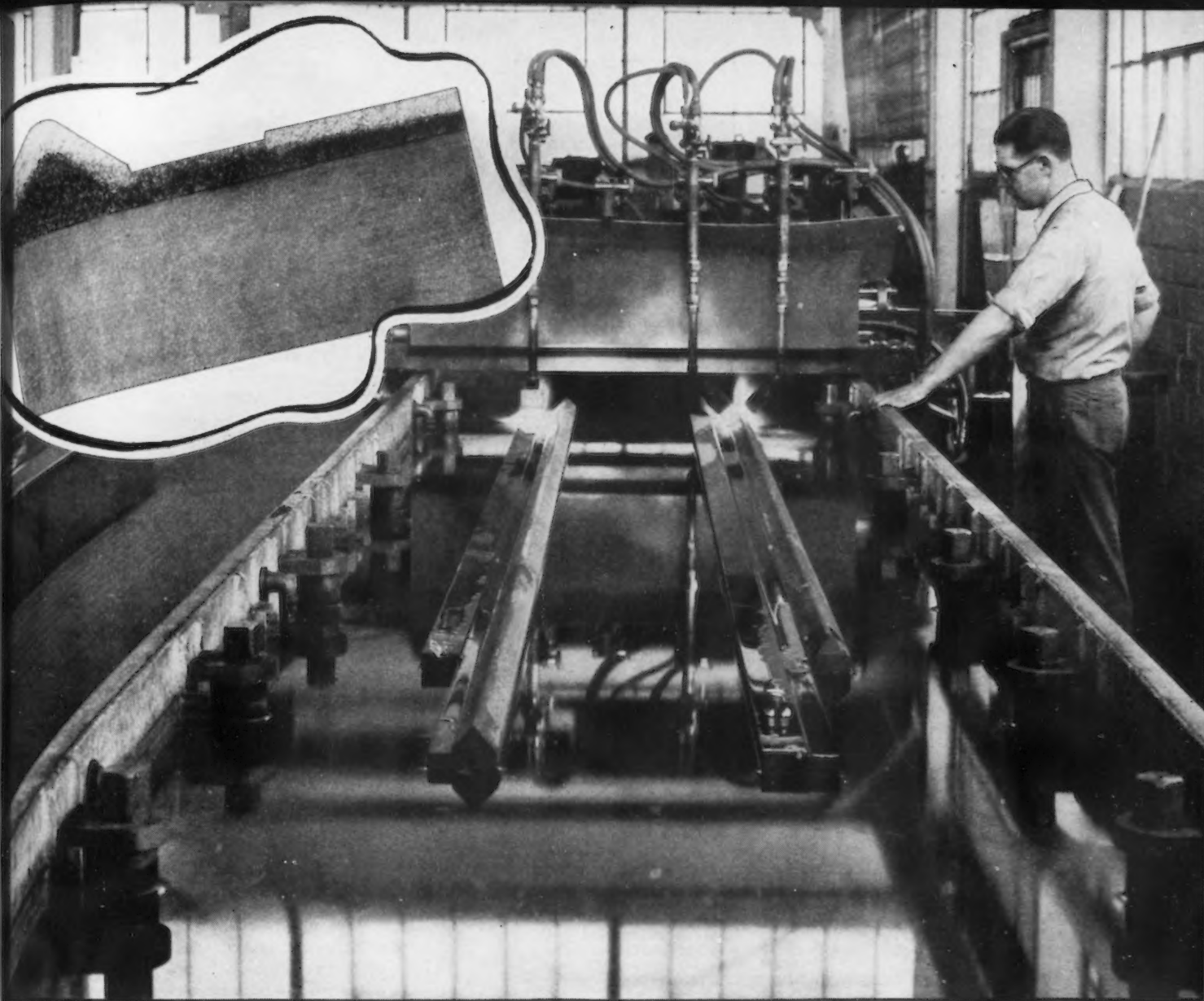
In general, there has been a turn for the better in buying attitude in Detroit. Hand-to-mouth buying is decreasing steadily. It has dropped successively through March, April, May and June from a peak of 59 per cent to 40 per cent, as shown by the survey of the Purchasing Agents Association of Detroit. The decrease in the last month has been 8 per cent. During the past month the trend has been largely to buying on a 60 or 90-day basis, with only a slight change shown in the 30-day buying group. For instance, in June the 30-day buyers totaled 21 per cent. In April and May their percentages were 22 and 19 respectively.

However, the 60-day buying group, after holding steadily in April and May at 12 per cent of the total, increased last month to 22 per cent. Those who buy three months in advance of requirements held steady at 13 per cent, but now have increased to 16 per cent. This improvement, after a five-month period when no outstand-

BUYING TRENDS IN METAL-WORKING FIRMS AND AUTO INDUSTRY (DETROIT)



SOURCE: Purchasing Agents Assoc. of Detroit



HERE'S HOW MONARCH FLAME HARDENS ITS LATHE BEDS!...

PERMANENTLY SOLVING THE PROBLEM OF BED WEAR

THE Monarch method of hardening "V" and "flat way" portions of lathe beds—by flame—represents today's most advanced bed hardening process:

The above photo shows a 24" Monarch lathe bed (25" wide overall and 14' long) being hardened, as specially designed **FLAME HARDENING** tips travel slowly over the "V" and "flat way" sections. The inset shows that the hardened portion extends to a minimum depth of $\frac{1}{8}$ " and can be made $\frac{1}{4}$ " or more.

After finish planing, the way surfaces are hardened, then ground to a tolerance of .0005" on large precision surface grinders. The hardened and ground way surfaces have the appearance of hardened steel. Grain structure of the entire hardened portion is greatly refined and condensed. The metal directly under the hardened sections is dense and close grained, giving solid rigid support to the hardened sections:

*An all-color motion picture film showing the complete **FLAME HARDENING** process, in detail, is available. If you desire to see a showing at your plant, just write us to this effect. (Standard lantern slides are also available.) No obligation. We also suggest that you send for a copy of the new **FLAME HARDENING** bulletin which is now ready.*

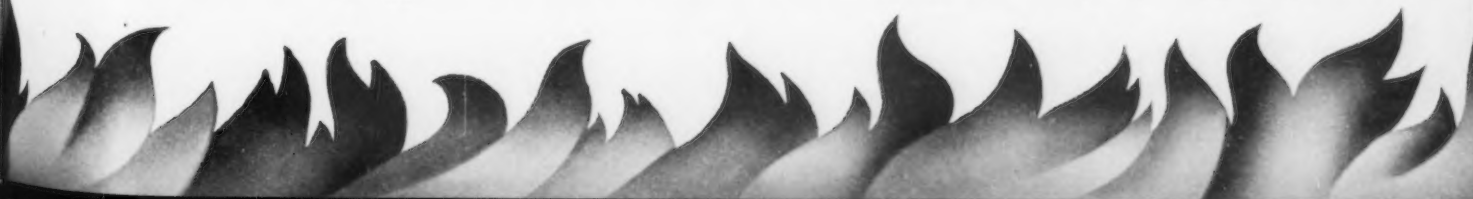
THE MONARCH MACHINE TOOL CO.
Sidney, Ohio, U.S.A.

MONARCH LATHES
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Newark Sales Office: 1060 Broad Street • Pittsburgh Sales Office: 604 Chamber of Commerce Bldg. • Chicago Sales Office: 622 W. Washington Boulevard • Indianapolis Sales Office: 3115 North Meridian Street.

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Monarch Lathes are Equipped with the American Standard **CAMLOCK** Flange Type Spindle Nose



ing change was recorded, is decidedly encouraging. For the rest of July, when buying for fall requirements is normally begun, the outlook is encouraging.

Employment Curve Steadied

Along with the general upward trend of industry, Detroit's employment curve has been steadied. From a 1937 peak of 125 last November, the index has dropped steadily to 54.9 in June. Apparently it is at its lowest point now. The last similar low point was 54.1 in the middle of October, 1934. Definite upward movement is not looked for until September, with the first indication probably coming in August.

Industrial improvement in Toledo has shown slight gains during June. Fifty-one plants recently reported 11,264 now at work, for a net gain of 344 for two weeks. The Toledo situation has been improved by small releases of automotive parts for clean-up on 1938 production. Several auto parts plants there are taking inventory and making active preparation to start work on 1939 models about mid-July. Shortly there should be releases on 1939 parts which will further improve the Toledo situation.

Toledo industries recently have reported an improvement in machinery and equipment orders. Surface Combustion Co. has reported two large orders, one for a large sheet annealing furnace for the Irvin plant of Carnegie-Illinois Steel Corp., the other for two stress relieving furnaces for Brooklyn and Philadelphia Navy yards.

More Glass To Be Used

Glass manufacturing plants anticipate an increasing use of safety glass, with a larger amount being used in some of the new models for 1939. The reason for this trend next year toward larger windows in automobiles lies in the fact that the wife of an executive of one of the large companies has claustrophobia. The high sides and low roofs of present cars give her that "all-closed-in-feeling." It is reported that she complained to her husband about it, thereby inaugurating a train of thought that resulted in lower window lines in next year's models.

In the older cars, as you remember, the top of the seat cushion was only a few inches below the edge of the body. You felt as though you were sitting on top of the world, but none too securely. Since those days, how-

ever, the floors have been brought closer to the ground, seats have been lowered and at the same time the body "belt molding" has been raised inch by inch until today it is about chin-level for short passengers.

Within limits, this gives the passenger a feeling of security, because he is surrounded by a wall of steel and because the angle of vision toward the ground is spread out. However, the designers apparently are now convinced that they went a little too far in some cases. The changes that have been made are described as "notching out" the lower window line but this probably means merely that the whole lower window line has been dropped. If windows are larger, more window glass will be used and a trifle more steel will be stamped out for the scrap heap. More steel will be used because bodies are universally wider for next year. Buick, with its flashy new design, described in this column recently, will have a more sharply sloping windshield and will use more glass because the windshield opening is larger.

Still in the experimental stage is the new radiator grille to be made of very thin stainless steel on a plastic filler. It may yet be seen on a 1939 car.

THE BULL OF THE WOODS

BY J. R. WILLIAMS



Synthetic Paint for Chrysler

Real news "from the feed box" is that the entire Chrysler line of cars will appear at the show dressed up with new paint jobs because Chrysler will begin to use a new synthetic paint, replacing the lacquer type paint that has been used for several years. This is understood to be something similar to the Ford soy bean base paint. It requires the installation of something like \$300,000 worth of new paint shop equipment, it is understood. New ovens will be constructed for the Briggs body plant which supplies Chrysler, for the Chrysler-Kercheval plant and the new Dodge truck factory on Mound Road, north of Detroit. The new ovens will be equipped with gas-fired heating units to supply extra heat required for drying this paint.

Apparently the change actually was decided on only a short time ago, because construction of ovens was held up, then released with a rush order. There was not time to buy steel from the mills if the delivery date of Aug. 15 was to be met, so the fabricator bought steel cut to size to save time.

The Briggs plumbing ware division
(CONTINUED ON PAGE 73)

Westinghouse Tests 180 Creep Bars

(CONTINUED FROM PAGE 34)

centric sheets of polished nickel and aluminum separated by powdered silicel. Sand is used in the 6-ft. foundation pit because of its ability to minimize the effects of vibration which are known to hasten the creep of metals.

Three electric windings on the metal core of the furnace produce temperatures up to 1000 deg. F. and a photoelectric cell maintains the temperature within 10 deg. or less by automatically operating an input resistance. The cylinder revolves once an hour in order to distribute the heat equally to all parts of the furnace. With all three units in operation, an operator is able to plug in by means of a telephone switchboard to 125 thermocouples and determine exactly how the heat is being distributed inside the furnace.

Each heating core has 12 spaces for holding twelve 20-in. test samples,

each of which may be subdivided into five sections to make 60 tests. Dial gages connected with comparison rods extending through the top of the furnace measure the relative vertical displacement of the rods by the samples which may be loaded by weights and levers to carry 50,000 lb. per sq. in. of metal under test. But for a double check, the machine is equipped with a circular track and a micrometer microscope or extensometer. Two platinum spots or targets are welded at the top and bottom of the specimens, very fine lines are scratched on the spots and they are later fastened to the samples before they go into the furnace. When it is time to take a measurement of the creep, the cylindrical shell is revolved until the sample is opposite two quartz windows which pierce the 10½-in. wall. The microscope is rolled in place on the track and used to measure the distance between the two platinum targets. Daily readings are made for three months, the results being charted as a gradual curve. Thus, in three months an estimate is available on how the metal will creep during the next 20 to 30 years.

per hr. the cost is obtained by starting at 250 amp.—going to the labor items marked \$2.00, horizontally to the arc speed curve, and down to cost per foot, 14.5c. Position, type of joint, deposition efficiency, all govern speed. If, therefore, the total cost of operation is divided by the speed all factors are accounted for.

For individual use in specific cases, this can be further simplified. Suppose power and electrode figures are as given above 2c. per kw-hr. and 8½c. per lb., labor is \$1.00 per hour and operating factor is 66⅔ per cent. Labor item is then \$1.50. Our tabulation then becomes:

Amperes	120	200	300	400
Electrode plus power cost ...	37.9	68.7	113.5	172.4
Labor item	150	150	150	150
Total	187.9	218.7	263.5	322.4

Instead of plotting as in previous curve, the amperes and the cost scale are plotted together and we have one scale—amperes to get directly the cost per foot. (See Fig. 15.)

These three items—labor, electrode, power—are the basic ones of welding costs.

But even these are influenced by and may influence the final or finishing treatment. Such treatment may be as simple as painting or nameplating. Painting involves accessibility, which may be a matter of preparation.

Stress relieving and/or heat treatment may mean special consideration in preparation and handling; question of collapse or deformation when metal is soft; how to support and provision for escape of gases. There must be no completely inclosed parts, otherwise the expansion of the air would cause deformations. All of these must be given careful thought and their interrelation thoroughly studied.

This final treatment or finishing process is related to preparation, the method of handling of joints or sub-assemblies and these in turn effect labor, electrode and material costs.

Welding costs are reduced by: Use of larger machines which are more efficient than smaller ones; and by use of large electrodes which deposit metal of high quality and high ductility. This large electrode results in less tendency toward distortion. The use of large generators and large electrodes produces, therefore, welded construction of improved quality and at low costs. And when quality goes up and cost goes down can more be required of a process? Arc welding does just that.

Transformer Cores Now Being Made of Cold Roll Strip

(CONTINUED FROM PAGE 37)

trol the winding of the cores to desired thickness. After annealing, the cores are ready for the assembly process.

Assembling cores and coils is accomplished without setting up any stresses in the core by a machine which tightly binds each core around the electrical coils into its original prewound spiral form and size with the turns in the same sequence. Both cores are permanently held in shape around the coils by spot welds, and the core and coil unit is then ready for clamping, treating, and assembly in the transformer tank.

Because the structure of the core and coil unit is inherently solid and self-supporting, the clamp is of light steel and actually serves more as a cradle and a support for the leads, rather than as a clamp of the type needed with other type transformers. And since the cores closely surround the coils, the coils are firmly fixed against mechanical forces of short circuit. The wound core distribution transformer is appreciably lighter than a transformer with the conven-

tional core arrangement, due to the more efficient use of materials.

Low Cost Manufacture Of Welded Products

(CONTINUED FROM PAGE 51)

The kw. input at arc voltage is the desired factor and there is no need to calculate efficiency in per cent.

Amperes	120	200	300	400
Kw. input (arc volts)	6.2	10.1	16	23.8
Lb. deposited	2	3.8	6.4	9.8
Lb. purchased	3	5.7	9.6	14.7
Kw-hr./lb. pur. ...	2.07	1.78	1.68	1.62
Cost power (cents at 2c. kw-hr.) ..	12.4	20.2	32	47.6
Cost electrode (8½c. lb.)	25.5	48.5	81.5	124.8
Total cost (electrode and power)	37.9	68.7	113.5	172.4

If the costs are plotted against amperes (arc) then the curves shown on Fig. 14 are obtained. The labor charge is the hourly labor rate divided by the operating factor, or it may be labor charge plus overhead, so that the total obtained is the cost per hour of operation. These are added to the curves for electrode and power cost as shown.

Then for any arc ampere, as, for example, 250 amp. with labor at \$1.00 per hour, operating factor 50 per cent, the labor item = \$2.00 (1.00 ÷ 50 per cent). For an arc speed of 20 ft.

THIS WEEK IN WASHINGTON

... Anti-monopoly committee mobilizing data for hearings to be started in September . . . Changes in steel basing points being closely studied . . . Government pump priming coincides with political maneuvers to reelect New Dealers.

By L. W. MOFFETT

Resident Washington Editor
The Iron Age

WASHINGTON. — The 12-member anti-monopoly committee, in a move giving wide latitude to the executive departments in developing material to be brought before the full committee, has directed representatives of the six agencies to go ahead with their respective recommendations, preliminary to the public hearings scheduled for September. Under this arrangement, the Federal Trade Commission, by virtue of its former studies of the basing point system as practised in the steel, cement and other industries, is the designated agency for continuing an investigation of the subject for the anti-monopoly committee.

Garland S. Ferguson, Jr., present chairman of the FTC, who was designated by President Roosevelt along with other departmental representatives to serve on the monopoly committee, reminded the full committee at its second meeting last Thursday that his agency has made five or six studies of the basing point system which are available for the scrutiny of the committee, and that the commission recommends that its field in the forthcoming inquiry cover general production and distribution problems, industrial combinations, mergers, pricing policies and other subjects surveyed by the agency since its

establishment in 1914. The full committee approved the FTC's recommendations together with the suggestions made by five other departmental representatives.

Basing Point Changes Studied

While members of the committee would not commit themselves as to whether the basing point system was discussed as it relates to the steel industry's recent elimination of price differentials and the establishment of new basing points, there were indications that both departmental and Congressional members of the committee were following developments closely.

It was pointed out that should the FTC, which has been openly hostile to the basing point system and anxious to break it up in favor of an f.o.b. mill basis of quoting prices, decide to bring its previous studies up to the minute in view of changes in the steel pricing situation, it could ask the committee to subpoena any information it deemed necessary. A committee has been named to approve or reject requests for subpoenas, but there is little to indicate that many such requests would be turned down. Moreover, the commission already has the power of subpoena under the FTC Act. Named to the subpoena committee were Chairman O'Mahoney, Vice-Chairman Summers, SEC Chairman Douglas and Representative Eicher, Democrat, of Iowa.

In any event it was made clear that the anti-monopoly committee's work between now and September will largely be placed in the hands of the executive department members,

with the subpoena committee functioning at the request of the departmental and Congressional representatives. Subsequently an executive committee will be named by Chairman O'Mahoney to function in the absence of the full committee.

Following an all-day session on Thursday attended by all members except Senator Borah, Republican, of Idaho, Senator O'Mahoney outlined the scope of the preliminary surveys to be undertaken by the executive departments.

Departmental Programs Outlined

In addition to the FTC's recommendations, these departments were directed to go ahead with their respective programs as follows:

Justice Department — Industrial combinations and mergers, pricing policies including collusive bidding practices.

Treasury Department—The results of the procurement division's experience in making Government purchases. Herman Oliphant, Treasury general counsel, whose name has been linked with Leon Henderson, former WPA economic adviser and now the committee's secretary and coordinator, in urging the Procurement Division to advertise for cement bids on an f.o.b. mill basis in an ostensible move to force abandonment of the basing point system. Oliphant also suggested that the committee broaden the scope of its inquiry to include a thorough research study of anti-trust laws here and abroad with particular attention to be given British law. Chairman O'Mahoney said there was no intimation given that a taxation approach be taken by the committee in this connection.

Department of Commerce—A general economic review based on data in the files of the late NRA, including a study of four or five reports not heretofore made public. It was recalled that a study of the steel industry was covered in one of these unpublished reports and that others have been classified from time to time as covering legislative, labor, trade

practice and administrative problems. Also by unearthing the NRA records, the committee will have access to the published NRA steel basing point report which recommended the establishment of a zone system. At the same time a published FTC steel report urged an f.o.b. mill system. The Commerce Department's Undersecretary, Richard C. Patterson, the only business man on the monopoly committee, was reported to have stressed the necessity of studying the size of firms as it relates to pricing policies and monopolistic practices.

Department of Labor—Commissioner of Labor Statistics Isador Lubin suggested the subjects of combinations and mergers as they affect labor, unemployment and living conditions.

Securities and Exchange Commission—Corporate powers and structures.

Specific Industries Not Mentioned

With Secretary Henderson sitting on the sidelines and prompting the Senator on developments during the day, Chairman O'Mahoney said it was "worthy of emphasis that complete harmony prevailed throughout the meeting" and, like the initial session, specific industries including steel, rubber, cement and oil, were not mentioned. No subjects for public hearing consideration were specifically discussed, the Senator said, reiterating that it was the committee's plan to conduct the inquiry on a high plane, free from any "witch-burning" stigma—a subject to which he refers incessantly.

The committee also moved during the day to extend the scope of the investigation to the extent of calling for participation by other Government departments on subjects with which each has been closely allied. The resolution sponsored by O'Mahoney resulting in the committee's creation, authorizes such additional departmental participation although there has heretofore been no intimation that the aid of additional departments would be requested. In fact, some Congressional members of the committee have vigorously opposed any executive department participation and have warned that it would further harass business.

Secretary Henderson, former economist for the Russell Sage Foundation until his effective criticism against the NRA prompted General Hugh S. Johnson to solicit his services as head of the NRA Research and Planning Division, has been as-

signed the job of preventing overlappings in the functions of the executive departments to see that the show runs smoothly. Congressional members have been asked to name an executive department representative with whom they would prefer to be paired and Chairman O'Mahoney will proceed with the pairing which will divide the full 12-man committee into six groups. Chairman O'Mahoney said no time has been fixed for the next meeting and he indicated that further sessions may be limited to one or possibly two before public hearings start in September. He emphasized that neither the six groups nor the individual representatives of the executive department would be granted the power to hold hearings or to subpoena witnesses. On the other hand, power to subpoena data and other information rests with these sub-groups provided their requests are approved by the proper sub-committee although both the FTC and the SEC are empowered to subpoena witnesses and records under the laws which created them.

Included in the FTC's list of reports available to the committee was the cost of living and commodity price survey conducted at the request of the President, after he complained of steel, copper and cement prices. For some unexplained reason he has never made it public. Also, the FTC listed its two-year investigation of the farm implement industry. On Thursday the commission turned over to Congress the second and last report on the \$150,000 survey authorized in June, 1936. It recommended an amendment to the Clayton Act making illegal the acquisition by large corporations of the stock or assets of competing corporations.

Farm Machinery Monopoly Changed

In addition to this "inadequacy" of section 7 of the Clayton Act, the commission reported that public and consumer were placed at a disadvantage because of what it called "the inadequate results achieved regarding the International Harvester dissolution case of 1918 under the Sherman Act." Factors cited by the commission as illustrative of what it described as "serious monopolistic conditions in the industry" included:

(1) The dominant position of the International Harvester Co.; (2) a large advance in the great majority of farm machinery prices as compared with prices of other manufactured products; (3) Profits of the International Harvester Co.; (4) the

high degree of rigidity in farm machinery prices during the depression; (5) a swift rebound of most farm machinery prices after the three severest years of the depression to levels exceeding those of 1929, one of the years of highest prices in the industry; (6) International's ability to make more net profits in 1937 than in 1929; (7) the relatively slight percentage of decline in farm machinery prices contrasted with the sharp decline in volume of production and employment as compared with industries known to be more competitive; (8) exchange of price lists among farm machinery manufacturers; and (9) evidence of dealer coercion.

Other points discussed in the reports covered concentration of control in large manufacturers; effect of concentration on prices; disparity in relative price movements; improvement in quality of machines, which, the FTC said, did not justify the maintenance of prices at such levels; margins of net profit on sales; profits and losses; profit margins on replacement parts; and the distribution of the farmer's farm machinery dollar; exclusive dealing or full line forcing; and trade association functions.

Harvester Company Denies Charges

The commission's report prompted a statement from Sydney G. McAllister, president of International Harvester Co., that the FTC had ignored material facts and natural causes, had based the report on "an ex parte investigation, and had denied the industry's request for a hearing and an opportunity to cite errors in the findings."

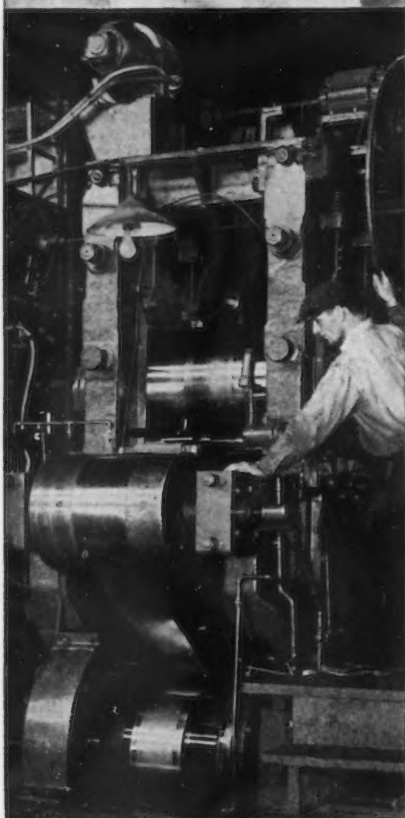
Referring to the FTC's complaint that his company enjoyed more net profits in 1937 than in 1929 due to a price-advancing policy prevailing allegedly because of a lack of competition, Mr. McAllister said:

"There were very substantial increases in 1937 in the two principal elements of costs—labor and materials. The prices of the harvester company were not increased as much as the increase in cost and the margin of profit to sales was less in 1937 than in 1929."

He characterized the report as "unjust" and a "witch-burning" announcement, denied the company dominates the industry as charged by the FTC, and cited figures indicating that the firm's percentage of the implement business has declined since 1918 and that "new and strong companies have come into the field."

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Pump Priming Coincides with New Deal Political Maneuvers

WASHINGTON. — With the occupants of 435 seats in the House and 36 in the Senate in doubt until the approaching primaries and November elections have decided the issues, the New Deal is bending every effort to capture as many seats as possible to assure a continuation of New Deal laws and the domination of so-called liberal trends in the next Congress. With a major recession on its hands, the scores of alphabetical agencies and other Governmental organizations are moving at top speed to head off the downward business trek and it is becoming increasingly difficult to segregate these multitudinous functions from the forthcoming political elections.

Of course, Administration lieutenants argue that all are jobs that must be done regardless of any political campaigns, but their very timing, their scope and the accompanying air of the spectacular, cause even the most credulous to ask: "Did they plan it that way without thinking of the approaching political battles?" Business, however, welcomes the upturn, occasioned by the outpouring of Government funds, and is hoping the improvement will be permanent rather than temporary.

The President himself is setting the pace. In his cross-country tour which ends in California on July 16, he has some 13 appearances scheduled, three of which are in Kentucky where his Senate Majority Leader, Alben Barkley, faces a stiff battle for reelection. As President, Mr. Roosevelt will unveil monuments, dedicate bridges and perform similar functions during the junket, but as head of the Democratic party he is admittedly out to unseat Supreme Court packing foes and other "yes but" candidates who did not go all the way down the line for the White House in the last Congressional sessions.

Moves with Political Tinge

Other developments in Washington which have been linked with a definite political tinge from the forthcoming political contests include:

The anti-monopoly investigation—The big show is timed for September when public hearings are scheduled to begin. In urging Congress to do something about the anti-trust laws, President Roosevelt waited for more than a year before carrying out the

recommendations of Attorney General Cummings. Of course, the inquiry if launched a year ago on the same basis as the present investigation, would still be under way, but interest by now would have dwindled to low ebb with little or no play being given the inquiry in the press. By planning the opening shot in September, the committee is assured of a maximum of publicity which always accompanies the initial push.

The wage-hour bill—Hailed by President Roosevelt as marking the greatest social advance since the Social Security Act was passed, the law will become effective on Oct. 24. If NRA experience is any criterion, the Administration will leave no stone unturned in launching an effective ballyhoo blast on or before Oct. 24.

The Senate Civil Liberties Committee—Fortified with \$60,000 to continue its investigation of violation of civil liberties and industrial espionage, the committee has scheduled hearings to begin July 18 to probe further into last summer's steel strikes in the Ohio area. Committee attaches have announced that T. M. Girdler, board chairman of Republic Steel Corp., will be subpoenaed along with 100 other witnesses who are to be summoned to Washington.

President Roosevelt's commission in England studying the British Trade Disputes Act—Mr. Roosevelt has indicated that the final report will not be used as a basis for revising the Wagner Act, thus giving rise to the rumor that the move was designed to appease industrialists who have criticized the Administration because of its refusal to recognize defects in the Wagner Act, and to move toward revision. CIO Chairman John L. Lewis refused to allow any of his followers to serve on the commission.

The WPA—Will increase its spending to provide jobs for a maximum of about 3,000,000 persons. The agency's recent order raising work relief wages in the South will benefit Arkansas and Oklahoma relievers to a greater extent than those in other Southern states. Both these two states are the scenes of political campaigns in which the New Deal has a substantial interest.

The PWA—Empowered to spend up to \$1,000,000,000 on various heavy public works. The President con-

stantly refers to PWA expenditures and other Federal aids to states in which he is urging reelection of preferred candidates.

The Congressional Record—Although Congress adjourned sine die on June 16, the Record has been published through July 5 to handle the numerous speeches inserted at the request of members. In them are listed scores of reasons why a particular candidate—usually the writer—should be reelected.

SWOC Wins Over Railroad Union at Steubenville Plant

WASHINGTON.—The Order of Railway Conductors at the Steubenville, Ohio, plant of the Wheeling Steel Corp. has been turned down on its request for certification as an exclusive bargaining representative. The National Labor Relations Board acceded to the contention of the Steel Workers' Organizing Committee that the conductors and brakemen should properly be considered part of an extensive industrial unit consisting of all employees of the company at its steel manufacturing and by-product coke plants. The SWOC, the NLRB said, at present holds a contract with the company for its members only, on the basis of this larger unit. Conductors and brakemen are eligible for SWOC membership, it was pointed out, and some of them have joined.

"At the company's Portsmouth, Ohio, and Benwood, W. Va., plants," the NLRB stated, "employees in the yard transportation departments, of which conductors and brakemen form a part, have availed themselves of SWOC grievance machinery under the SWOC contract with the company."

The NLRB also has certified an AFL union at the Mann Edge Tool Co., Lewistown, Pa., as the exclusive collective bargaining group for employees. The board based its decision on a check of membership cards with company payrolls.

Italy to Make Coins of A New Steel Alloy

WASHINGTON.—A new alloy identified as "acomonital" and composed of a special composition of "inoxidable steel" will be used for the coinage of Italian money to be put into circulation in Italy next October, according to reports received at the Commerce Department. Formerly made of nickel, four coins are to be affected by the change. All are of denominations of less than 5c.



Both the photo to the left and the one below show examples of good lighting in the Indianapolis Railways, Inc., service shops.



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The small photo shows a section of the shops where street cars are washed and painted. Here the general lighting units and the angle reflectors along the walls each contain one 250-watt mercury lamp and three 100-watt MAZDA lamps. Floods containing 300-watt MAZDA lamps are directed through square openings in the canopy to illuminate a car while it is being painted.

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..PERSONALS..

Schwartz to Leave Scrap Institute

BENJAMIN SCHWARTZ, founder of the Institute of Scrap Iron and Steel 10 years ago and its director general since its inception, has requested the institute board to release

him from his contract as executive head of the organization. It is his desire to devote his time to the practice of law, industrial and public relations work.

He has urged the board to appoint his successor as soon as possible, and has offered to continue for a reasonable length of time, so that he may

be of the greatest possible assistance to the new executive secretary, without any break in the operations and efficiency of the institute.

Mr. Schwartz will be leaving the institute at its highest peak, with a new record enrollment of over 700 firms and 19 chapters in the principal steel centers of the country. He was the recipient of the first award made by the institute board to the individual that had done the most for the best interests of the scrap industry.

For two successive years, the institute was honored by the American Trade Association Executives with a certificate of recognition for outstanding work in the trade association field. During 1929 Mr. Schwartz drafted the first code of business practices for



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BENJAMIN SCHWARTZ

the scrap iron industry, which was approved by the Federal Trade Commission and which is still in effect. During the NRA, he was the chairman of the national code authority of the scrap iron industry.

More recently, he led the successful campaign of the scrap iron industry in defense of its interests against a group of legislative proposals in both the House and the Senate for an embargo on scrap exports, and at hearings before Senate committees. As impartial chairman, Mr. Schwartz has participated in more than 250 arbitrations of contractual disputes between members and non-members of the institute.

WHITCOMB LOCOMOTIVES

J. L. WHITTEN has been appointed sales manager of the Lee Wilson Engineering Co., Cleveland. He was formerly with the Brown Instrument Co., Philadelphia.



WILLIAM G. BOLEY, of the Detroit City Gas Co., has been elected president of the Purchasing Agents Association of Detroit and will take office in September. HENRY GEORGE, General Motors, will be first vice-president; EARL L. COLEMAN, of Dearborn, will be second vice-president; CHARLES REUTELSTERZ, of the American Electric Heater Co., will be treasurer. L. G. AUBERLIN continues as executive secretary and WILLIAM R. H. LESTER, as recording secretary.



T. J. Ess, combustion engineer, Re-

tant steam engineer. Since the merger with United Alloy Steel Corp. to form the Central Alloy Steel Corp., and later Republic Steel, Mr. Ess has been combustion engineer at the Massillon plant.



JOHN W. BERSCHIED has been retired as superintendent of the Fairfield wire works of the Tennessee Coal, Iron & Railroad Co., after 48 years of service. He has been superinten-

dent of the plant since June 1, 1931. JACOB J. PHIFER has been appointed superintendent. He has been with the United States Steel Corp. since 1920 and was transferred to Fairfield as assistant superintendent on Jan. 1, 1938.



MAX W. BABB, president of the Allis-Chalmers Mfg. Co., Milwaukee, returned July 8, from a European trip of seven weeks, during which he vis-



J. L. WHITTEN

public Steel Corp., Massillon, Ohio, has resigned this position to become affiliated with the Association of Iron and Steel Engineers, Pittsburgh. His chief duties with the association will be the sponsoring of new editorial projects for the magazine, *Iron and Steel Engineer*, which is published by the society. Mr. Ess is intimately acquainted with the activities of the association. He was graduated from the Carnegie Institute of Technology in 1922, receiving the degree of mechanical engineer. His first steel mill affiliation was with the Central Steel Co., Massillon, Ohio, where he spent several years in the maintenance department, later being made the assis-

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♦ ♦ ♦

WALTER HARNISCHFEGER, president of the Harnischfeger Corp., Milwaukee, has returned from a business trip to Europe, his principal objective having been the international road show in Holland, where his firm made an exhibit of its line of excavators and other highway construction equipment.

♦ ♦ ♦

W. L. TRUMBBAUER, heretofore supervisor of training at the Bethlehem plant of the Bethlehem Steel Co., has been appointed management's representative at that plant, succeeding the late John K. Robinson. S. W. CHRISTINE, JR., has been made supervisor of training. He was formerly chief clerk of the training division. E. P. Gillett has been added to Mr. Trumbauer's organization.

Mr. Trumbauer received his formal schooling at the local high school and entered the employ of Bethlehem in 1910, his first job having been that of apprentice die-sinker in the drop forge department. He was advanced by various stages until in 1919 he was made general foreman of the Lehigh mill, heat treatment and cold finishing departments. He later became head of the metallurgical specification department and was supervisor of plant maintenance. He was appointed supervisor of the training division in 1937.

Mr. Christine entered the employ of Bethlehem in 1934, after graduation from the University of Pennsylvania. He was an inspector in the Lehigh mills, in the tool steel department, and was engaged in specification and steel application work before entering the training division.

Mr. Gillett has been associated with the industrial relations work of the company since his graduation from Ohio State in 1935, where he specialized in industrial engineering.

♦ ♦ ♦

J. R. ADAMS, since 1920 foundry superintendent at the Lebanon Steel Foundry Co., Lebanon, Pa., has been appointed general superintendent of the Crucible Steel Casting Co., Lansdowne, Pa.

♦ ♦ ♦

R. E. TAYLOR, who has been connected with the Norton Co., Worcester, Mass., for the past 17 years, for the last 12 of which in sales work in the Chicago district, has been appointed sales research manager. He

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succeeds MILTON P. HIGGINS, who was recently made resident manager of the Norton electric furnace plant at Chipawa, Ontario.

♦ ♦ ♦

JAMES W. PARKER, vice-president and chief engineer of the Detroit Edison Co., has been elected 1938-39 president of the Engineering Society of Detroit. HAROLD S. ELLINGTON, partner in the firm of Harley & Ellington, has been elected first vice-president; WILLIAM D. CAMERON, manager of the Detroit office of General Electric Co., is second vice-president; MARTIN R. FISHER, assistant city engineer, is secretary; GLENN COLEY, metallurgist for the Detroit Edison Co., is treasurer; HARVEY M. MERKER, manufacturing superintendent of Parke, Davis & Co., is assistant treasurer. Directors are ELLSWORTH J. BURDICK, engineering consultant, CLAIR W. DITCHY, a member of the architectural firm Ditchy, Farley, Perry, and JOHN H. HUNT, of the New Devices section, General Motors Corp.

♦ ♦ ♦

W. S. McALEER has been appointed manager of Koppers-Rheolaveur Co., a Koppers Co. affiliate. Since 1930, he has been an engineer in the sales department of the company. He was graduated from Carnegie Institute of Technology in 1917 with the degree of mechanical engineer. After several years with Heyl & Patterson, Inc., Pittsburgh, he joined the former Koppers Construction Co. (now Koppers Co., Engineering and Construction division) in 1926, where he was engaged in project work.

♦ ♦ ♦

ROBERT LEMUEL SACKETT, dean of the school of engineering at Pennsylvania State College from 1915 to 1937, has been awarded the Lamme medal by the Society for the Promotion of Engineer-Education for achievement in this field.

♦ ♦ ♦

W. J. MAYER, formerly commercial research engineer for the Reading Iron Co., has joined the Philadelphia sales office of the A. M. Byers Co., Pittsburgh.

♦ ♦ ♦

F. W. McINTYRE, vice-president and general manager of the Reed-Prentice Corp., Worcester, Mass., sailed on July 6 for an extended trip to England and France. He plans to return the early part of September.

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. . . THE NEWS IN BRIEF. . .

Automobile production returns to 40,000 level this week on old models as manufacturers prepare to buy steel for 1939 cars. Page 52.

Anti-monopoly committee mobilizing data for hearings to be started in September. Changes in steel basing points being closely studied. Page 56.

Government pump priming coincides with political maneuvers to reelect New Dealers. Page 58.

Machine tool industry looks to fall for upturn in business. Page 94.

SWOC wins over railroad union at Steubenville plant. The National Labor Board accedes to the claims of the Steel Workers' Organizing Committee.—Page 59.

Five cents no longer a "nickel"—Italy to make coins of a new alloy called "acmonital" to be put in circulation next October.—Page 59.

Benjamin Schwartz, founder of the Institute of Scrap Iron, asks institute board for his release as director general.—Page 60.

Toledo claims discrimination steel prices; auto parts in new competitive situation.—Page 66.

Monarch Machine Tool Co. issues new 16-mm. colored motion film showing flame hardening of bed ways to solve problems of wear.—Page 69.

General Electric orders 41 per cent below last year for the first six months.—Page 69.

Keystone Steel & Wire Co. has many old employees.—Page 76.

Youngstown Sheet & Tube Co. announces a new financing plan; both ingot and finishing capacity at Indiana Harbor is to be improved.—Page 76A.

Interlake Iron Corp. ruled not to be a public utility by the Se-

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CONVENTIONS

- Sept. 26 to 30—Association of Iron and Steel Engineers, Cleveland.
- Oct. 10 to 14—American Institute of Steel Construction, French Lick Springs, Ind.
- Oct. 12 to 15—The Electrochemical Society, Rochester, N. Y.
- Oct. 13 to 15—Society of Automotive Engineers, aircraft production meeting, Los Angeles.
- Oct. 17 to 21—National Metals Congress, Detroit.
- Oct. 17 to 20—American Institute of Mining and Metallurgical Engineers, Detroit.
- Oct. 31 to Nov. 2—National Foreign Trade Council, New York.
- Dec. 5 to 10—Exposition of Power and Mechanical Engineering, New York.

curities and Exchange Commission.—Page 76A.

Watson-Stillman Co. to make British equipment.—Page 76A.

Army orders 276 aircraft engines and 98 planes.—Page 76A.

J. & L. wins Pennsylvania Department of Labor and Industry "Certificate of Merit" for 1937 safety records.—Page 76A.

Government calls steel wage conference in apparent effort to stop reductions.—Page 76B.

FOREIGN—

American position defined at recent meetings of the International Steel Cartel at Brussels.—Page 71.

German company absorbs four of the largest Austrian iron and steel plants to develop the low grade iron fields of the country.—Page 71.

German steel output aided by scrap imports continues to show a steady advance.—Page 72.

Russia plans to put into operation six new blast furnaces and eleven open-hearths during 1938.—Page 72.

British and American steel interests form connections. Manufacture of stainless steel suitable for use in a wide range is planned.—Page 73.

BOOKS—

"Principles of Engineering Economy" a newly revised edition of 431 pages, the author is Eugene L. Grant.—Page 74.

"Management and Employment" a handbook discussing waste elimination, team work, planning and other interesting allied subjects just issued by SWOC.—Page 74.

"Arc Welding and How to Use It," an enlarged edition by W. J. Chafee and issued by Hobart Brothers Co., Troy, Ohio.—Page 74.

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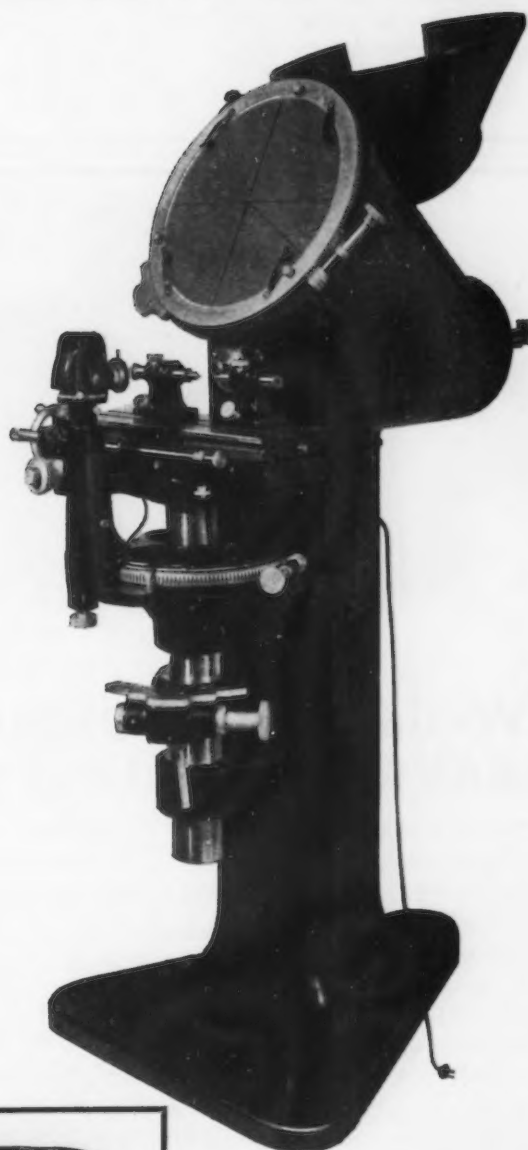
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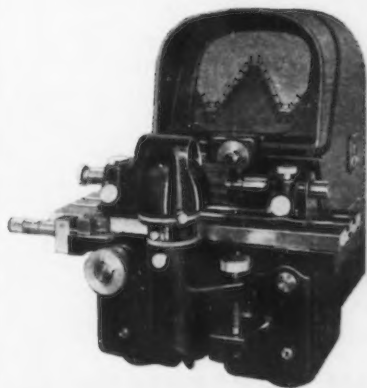
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Toledo Claims Discrimination on Steel Prices; Auto Parts in New Competitive Situation

TOLEDO.—Industry in Toledo, within 60 miles of Detroit, must bear the impact of a 12c. unfavorable price differential with Detroit under the steel price schedules announced recently, investigation re-

By **W. F. SHERMAN**
Detroit Editor, The Iron Age

o o o

veals. There has been nearly a 50 per cent increase in the actual differ-

ential (from 6½c. to 12c.), and Toledo continues to sacrifice a natural freight advantage that amounts to 3c. per 100 lb. on carload shipments from major mill areas.

As a result, claims again are made that unnatural and discriminatory steel prices are "contributing to the economic destruction" of this industrial community which has grown into one of the major consuming areas outside Detroit itself. Impelled by apparent danger to most of the 40 large consumers of steel in Toledo and by threats of further unemployment in this city of 300,000 people, threats were heard last week that charges of discrimination again will be preferred before the Federal Trade Commission as they were in 1935.

It was learned, too, that economic pressure had launched a move for enforced readjustment even before recent price changes made conditions more critical than ever for the Ohio automotive area in and around Toledo. An official protest was discussed by some Toledo industrialists weeks ago. Now action has been temporarily stayed while the effects of recent changes are digested.

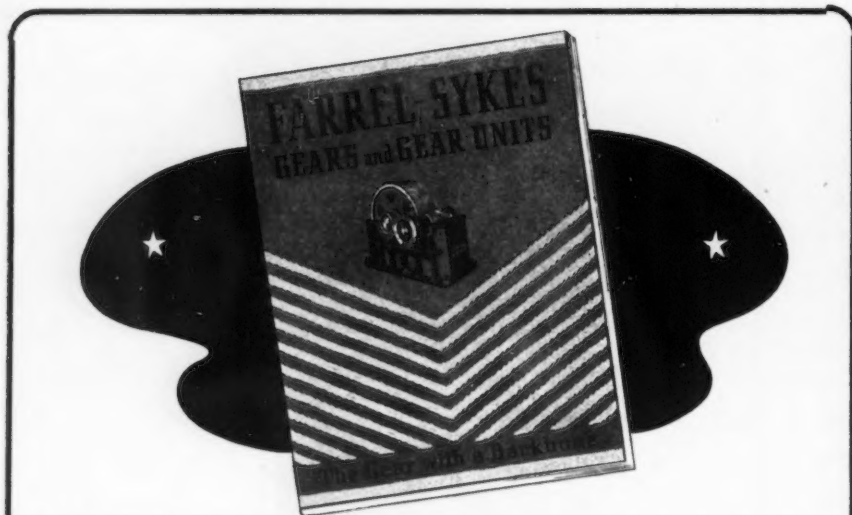
Interviews in Toledo in the last week with executives and buyers bared a widespread feeling of genuine fear that, deprived of natural advantages in freight rates and discriminated against by preferential rates to Detroit consumers, Toledo plants might succumb to competition in Detroit.

Actual delivered prices in the city now are \$1.80 per ton higher than prices paid in Detroit. (In the case of cold drawn bars, for which Detroit is a base, Toledo pays \$1.90 extra.) Considering the city's location, nearer the major mills, Toledo consumers declare that they are being deprived of an additional 60c. natural freight advantage, bringing the total of the "loading" on price to \$2.40.

They point to the fact that finished products, made of the higher priced steel, must be delivered to Detroit markets either by truck or rail, in the latter case at a cost of 11½c. per 100 lb.

Many Consumers in Toledo

Prominent among the firms which rate as large consumers of steel in



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and engineering data are given on speed increasing units, vertical reduction units of the horizontal shaft type and right angle vertical shaft drives.

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FARREL-BIRMINGHAM COMPANY, Inc.

333 VULCAN STREET BUFFALO, N. Y.

The Gear with a Backbone

this area, according to the Toledo Chamber of Commerce:

Acklin Stamping Co.
American Brake Shoe & Foundry Co.
American National Co.
American Can Co.
Bingham Stamping and Tool Co.
Champion Spark Plug Co.
Chevrolet Motor Ohio Co.
City Machine & Tool Co.
City Auto Stamping Co.
Doehler Die Castings Co.
Dura Co.
DeVilbiss Co.
Electric Auto-Lite Co.
Etna Machine Co.
Gendron Wheel Co.
Houghton Elevator & Machine Co.
Jeannin Electric Co.
S. M. Jones Co.
Hausman Steel Co.
Kent-Owens Machine Co.
Logan Gear Co.
Mather Spring Co.
Meilink Steel Safe Co.
W. G. Nagel Electric Co.
National Supply Co.
O'Neill Machine Co.
Saxon Die & Stamping Co.
Shaw-Kendall Engineering Co.
Seiss Mfg. Co.
Spicer Mfg. Co.
Surface Combustion Co.
Tillotson Carburetor Co.
Toledo Machine & Tool Co.
Toledo Scale Co.
Toledo Metal Furniture Co.
Toledo Shipbuilding Co.
Toledo Stamping & Mfg. Co.
Toledo Steel Products Co.
Toledo Wheelbarrow Co.
Willys Overland Co.
Wine Railway Appliance Co.

Some of these companies participated in a petition filed three years ago with the FTC to obtain parity with southeastern Michigan competitors.

Price Battle Has Waged for Years

The battle over prices along the Michigan-Ohio line is documented by reams of paper, but for the most part consumers are concerned at present with events subsequent to the condemnation of "Pittsburgh plus" by FTC in 1924. Prices which prevailed for nearly a decade were those set for iron and steel by the Interstate Commerce Commission in "Rate Structure Investigation, Part 6, Iron and Steel Articles, 155, I.C.C. 517." On this basis, Toledo consumers enjoyed relative parity with consuming points in lower Michigan, where competition is most severe.

During this period of growth for Toledo industry, Detroit and Toledo plants ordinarily were quoted the same prices, plussed by the actual freight rates in either case. Toledo, being much nearer such producing areas as Pittsburgh, Youngstown, Cleveland and even Chicago, had the benefit of

lower freight rates than Detroit, generally being ahead 3c. per 100 lb.

Basically, the situation at Toledo has been unchanged. But meanwhile Detroit sought and won a few years ago a preferential automotive steel freight rate of 15c. per 100 lb. on bars and 20c. on sheets instead of the then-published rate of .265c.

This brought forth an unfruitful protest to FTC, the American Iron and Steel Institute and the Iron and Steel Code Section, Iron and Steel

Industry division of the National Recovery Administration. Clare B. Tefft, the Transportation Commissioner of the Toledo Chamber of Commerce, filed a brief (July 1, 1935) which gave the following example:

"*** Detroit buys hot rolled sheets at today's Pittsburgh basing price of \$1.85 per 100 lb., plus an arbitrary delivery charge of 20c. per 100 lb. (although the actual freight rate is .265c. per 100 lb.), while Toledo pays the same Pittsburgh basing rate, plus the



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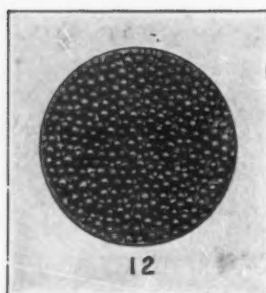
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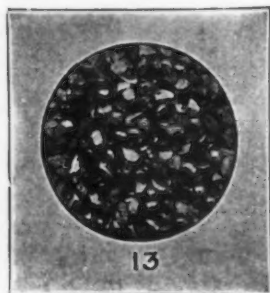
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THE IRON AGE, July 14, 1938—67



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actual freight rate of .235c. per 100 lb. The price delivered in Detroit is then, on hot rolled sheets, \$2.05 per 100 lb., and at Toledo \$2.085 per 100 lb."

Tefft pointed out then that Detroit consumers were, in effect, granted an arbitrary reduction of 3½c. per 100 lb. In addition, he said, Toledo was deprived of a legitimate and natural freight advantage of 3c. The total of 6½c. difference is equal to \$1.30 per ton.

Disparity Now Greater

Under the new pricing system, with the rates that have been announced, the disparity is even greater.

"Let me give you a specific instance," Mr. Tefft said last week. "By virtue of our proximity to Cleveland, the use of Cleveland f.o.b. mill price, plus the actual freight rate from Cleveland to Toledo under the iron and steel scale of freight rates, gives Toledo its cheapest rate on many articles in the iron and steel list. The f.o.b. mill base on hot rolled sheets is today set at \$2.15. The freight rate from Cleveland to Toledo is .19c. The cost laid down at Toledo is, therefore, \$2.34 per hundredweight.

"The same base price of \$2.15 exists for Detroit, but the actual freight rate from Cleveland to Detroit is .22c. This, then, would make the laid down price at Detroit \$2.37 per 100 lb. as contrasted with Toledo's \$2.34.

"However, what actually happens is this: The Detroit consumer pays this base price of \$2.15 plus an arbitrary charge of .10c. per 100 lb., the difference between the .10c. and the .22c. freight rate per 100 lb. apparently being absorbed by the steel producers.

"The result is that on hot rolled sheets the Detroit consumer today—using the Cleveland base—is buying this steel \$1.80 per ton less than is the Toledo consumer." This does not include the sacrifice of its natural freight advantage.

Another way to look at it is:

FORMER SCHEDULE

Freight rate differential plus 3c. in Detroit (Actual).

Delivered price differential minus 3½c. in Detroit.

Price advantage in Detroit equalled 6½c., or \$1.30 per ton.

PRESENT SCHEDULE

Freight rate differential plus 3c. in Detroit (Actual).

Delivered price differential minus 9c. in Detroit.

Price advantage in Detroit equals 12c., or \$2.40 per ton.

A Problem for Willys

What this will mean in the case of Willys, for instance, is a problem in itself. The company, making a comeback fight, finds itself forced to adhere

strictly to a car price below that asked by Ford, Chevrolet or Plymouth. Whereas the new steel prices will undoubtedly permit them to reduce prices, Willys might eventually see prices go the other way because volume might be adversely affected. In other words, Willys' percentage of reduction will be so small, compared with the Big Three, that marginal buyers may pass up the Willys and buy one of the others. Then Willys sales would be reduced, cost per unit increased, and the company injured.

The arithmetic behavior of percentages will play a big role in the success or failure of many parts plants to meet competitive price situations, it is conceded. As the material cost is increased in proportion to total cost, the effects of price changes and dislocations (such as the recent one) become more serious. In many simple automobile parts or accessories, labor, and even items of overhead, are secondary to material cost.

As an example, it was learned that one large stamping company in Toledo, estimating the cost of a part on the basis of new and old steel prices, found the cost decreased from 80c. to 70c. The percentage of cost reduction—14.28 per cent—is all out of proportion to the change in steel price, but is typical of some manufacturing operations. This very fact multiplies the difficulties of Toledo's suppliers to the automobile industry.

This fact also is antidote to the loose thinking which reasons this way on car prices:

"Steel price down \$5 per ton; one ton used per car: Cost and selling price down only \$5."

Actually it is possible that (considering the large amount of scrap output from the auto plants and also considering the multiplier discussed above) automobile prices may easily come down \$15 on specific cars.

Parts Manufacturers Affected

In the parts industry outside Detroit there are many firms which are very much affected by the new prices. Eastern Michigan cities, within a fan-shaped area that extends as far as 32c. freight rates from Pittsburgh apply, pay Detroit prices, plus 5c. For virtually all of them this is a gift, since Pontiac, closest of all to Detroit, would normally pay 7½c. freight from Detroit. They can, if they will, use this price advantage against competition in cities that are not so favorably located nor so well treated.

Upstate, and outstate, there are cities like Bay City, Saginaw and Grand Rapids which pay steep freight rates compared with Detroit and east-

ern Michigan cities. Bay City and Saginaw, for instance, will buy on a Cleveland base. For hot rolled sheet or bars, the freight is 27c. and 28c., respectively, to these points, so they pay 17c. to 18c. more than Detroit plants, and 12c. to 13c. more than cities nearer Detroit. Grand Rapids, on a Gary base, will pay 23c. freight; moreover, the huge new Fisher Body plant there must build bodies in competition with the Cleveland plant, which is located at a basing point.

The "squeezing" to which Toledo plants and many outstate Michigan plants will be subjected will be duplicated, though to a lesser degree, it is said, in some other northern Ohio manufacturing towns and a few spots in Eastern Indiana.

Effects on two important independent auto manufacturers, Nash at Kenosha, Wis., and Studebaker at South Bend, have not yet been fully determined. It is probable, however, that in the last analysis they will find their competitive position with Detroit unchanged. They will benefit 10c. per 100 lb. on sheets and 5c. on bars. For the purchase of cold drawn bars they are not as fortunately situated as Detroit which is a basing point.

However, the announcement of Chicago prices equal to those at Pittsburgh probably will have a serious effect on one of the largest Toledo stamping plants. Recently the firm, which has done a 100 per cent automotive business, developed, at considerable effort, a number of farm implement custom-

ers near Chicago and west of that city. Now, obviously, price competition is likely to rule out the Toledo firm on future contracts for the parts which it developed as stampings.

Monarch Machine Tool Co. Has New Moving Picture

A 16-MM. colored motion picture film showing flame hardening of the bed-ways of Monarch lathes to solve the problems of wear has been made available by the Monarch Machine Tool Co., Sidney, Ohio, for use by technical societies and industrial and other groups. Standard lantern slides have also been made. The film, 100 ft. in length, shows the actual processing, including subsequent surface grinding to a tolerance of 0.0005 in.

General Electric Orders Much Below Last Year's

ORDERS received by General Electric Co. during the first six months this year amounted to \$128,223,823, compared with \$217,265,619 for the same period last year, a decrease of 41 per cent, President Gerard Swope has announced. Orders received during the second quarter of 1938 amounted to \$62,847,423, compared with \$111,518,589 during the corresponding quarter of 1937, a decrease of 44 per cent.

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2,084,079, 2,190,338, Other Domestic and Foreign Patents
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...OBITUARY...

GEORGE E. EMMONS, formerly manager of the Schenectady works of the General Electric Co. and later vice-president in charge of manufacturing of the company, died in Pasadena, Cal., on July 1, aged 80 years. He was one of the leaders in the electrical industry whose early training began in the factory shop and not in the technical school. After a public school edu-

cation and employment in a country store, he became connected with the Thomson-Houston Electric Co. In 1893 Mr. Emmons was appointed manager of the Lynn, Mass., works of the General Electric Co. and the following year was transferred to the Schenectady works, first as assistant manager and later as manager. He held that position for 25 years. In 1913 he was appointed chairman of the manufacturing committee of the company and in 1916 became vice-president in

charge of manufacturing. He retired in 1924.

♦ ♦ ♦

THOMAS J. SMITH, former president of the Peters Machine Co., Cleveland, and at one time vice-president of the Cleveland Steel Products Corp., died July 4 at his home in Cleveland at the age of 64.

♦ ♦ ♦

CHARLES A. GOEHRINGER, who spent 40 years of his life in the foundry business and retired a year ago only because illness prevented his continuing, died July 3, at his home in Detroit. Mr. Goehring, born in Detroit, April 18, 1876, started in foundry work as a molder when he was 22 years old. He was employed by the Acme Foundry Co., Detroit, for about 30 years. He was a foreman seven years of that time, and for 12 years was superintendent of the plant. About 10 years ago he went to work for the Ford Motor Co. and worked there until he retired one year ago because of ill health.

♦ ♦ ♦

LEON A. TAYLOR, 48 years old, owner of the Taylor Supply Co., Lapeer, Mich., died from a heart ailment, July 7. A native of Dixon, Ohio, he lived in Kalamazoo, Mich., until 14 years ago when he founded his company in Lapeer.

♦ ♦ ♦

GEORGE E. CLARKE, ill a month, died July 8. Mr. Clarke was the assistant sales manager of Hupp Motor Car Corp. Born in Williamsburg, Va., he went to Detroit in 1905 as northern passenger agent for the old Queen & Crescent Railroad, now the Southern Railway. In 1914 he became associated with the old Maxwell Motor Co., and later with the old Willys-Overland Co.

♦ ♦ ♦

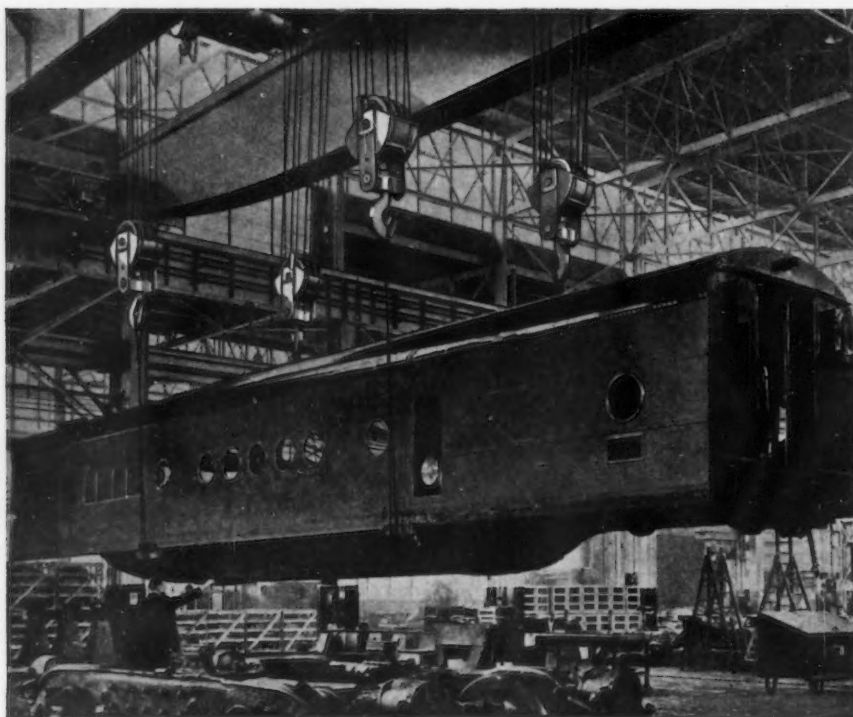
CLIFFORD M. BEAN, assistant to manager of sales in the Boston office of Lukens Steel Co., Coatesville, Pa., and for the past 38 years identified with the company, died at his home in Somerville, Mass., on July 3. Prior to going with the Lukens Steel Co., Mr. Bean was associated with the George F. Blake Co., Worcester, Mass. He was born in Charlestown, Mass., 76 years ago.

♦ ♦ ♦

JOHN F. HORN, aged 80, pioneer western Pennsylvania industrialist, died July 5, at Pittsburgh. Mr. Horn had been connected with Carron Iron Works, Glasgow, Scotland, Pennsylvania Lead Co., and a subsidiary of Apollo Steel Co.

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MATERIALS HANDLING EQUIPMENT

FREDERICK TSCHUDY, formerly with the Tennessee Coal, Iron & Railroad Co., but in recent years retired, died July 5. Mr. Tschudy had been connected with iron and steel operations in the Birmingham district since 1909. He built the first battery of by-product coke ovens operated by the Tennessee company and served for more than 10 years as a consulting engineer. Then he went with the Woodward Iron Co., retiring from business in 1928.



HARRY MCLEOD LEWIS, one of the founders and secretary and treasurer of the Badger Malleable & Mfg. Co., South Milwaukee, Wis., died on July 7, aged 65 years. He was born in Sandusky, Ohio, and before going to South Milwaukee in 1908 was treasurer of the Chicago Stove Works, Chicago, later being one of the founders of the Peerless Steel Range Works, Chicago.



MICHAEL J. WALSH, founder and president of the M. J. Walsh Machinery Co., Milwaukee, dealer in mechanical equipment, died on July 6, aged 71 years. He was born in DeKalb, Ill., going to Milwaukee in 1909 to found his machinery business. He retired in 1933.

German Company Absorbs Austrian Steel Plants

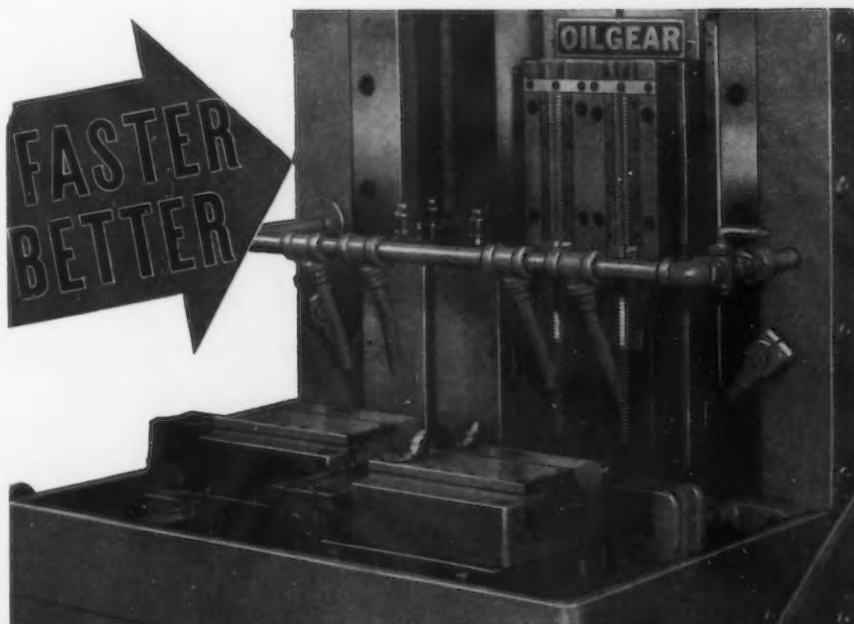
LONDON.—The Reichswerke A. G. Hermann Goering, the State enterprise formed under Germany's four-year plan to develop the low grade iron fields of the country, has recently absorbed four of the largest Austrian iron and steel works. These companies—the Pauker Werke A. G., of Vienna, the Steyr-Daimler-Puch A. G. of Vienna and Graz, the Maschinen und Waggonbau-fabrik A. G. of Semmering, and the Steyrische Gusstahlwerke A. G. of Judenberg and Vienna—will, it is announced, provide the necessary foundation for the work which the Reichswerke seeks to accomplish in Austria.

With the acquisition of these important enterprises Field-Marshal Goering's plans for making Austria a center of German industry has advanced a substantial step further towards fulfillment. Work on the new steel works of the Reichswerke which are being built at Linz is advancing rapidly, and every effort will be made to commence the exploitation of the Styrian iron ore fields on a large scale.

American Position Defined at Recent Meetings of Steel Cartel

LONDON.—There has been much speculation in Continental trade circles concerning the arrangements made with the American steel exporters at the recent meeting of the International Steel Cartel at Brussels. Apart from the American position,

the growing importance of Sweden in the world steel market is exercising chief attention in Continental circles. Sweden, which specializes in high-grade steels, is not in the Cartel and it has recently begun to extend its activities to steel of all kinds. In



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1937 Sweden's steel production was 1,130,000 tons—five times as much as in 1932—and exports reached 340,000 tons, of which more than 25 per cent went to Britain. With its immense iron ore reserves, Sweden appears certain to develop into a strong competitor in the international steel market. No doubt the possibilities of inviting her to join the Cartel are being canvassed.

Incidentally, the increase in the number of producing countries is a problem that is causing growing uneasiness to the Cartel. The feeling of the principal Continental members is that after they have conceded export quotas to practically all the produc-

ing countries there will be very little left for themselves.

Considerable interest attached to the more ample data on the Brussels meeting now available. The meeting confirmed the decision made at the previous Rome conference for the prolongation of the Cartel until the end of 1940, but, contrary to unofficial reports which have gained wide currency, it did not stabilize prices until the same date. Actually, it was agreed to stabilize prices only until the end of the current year. At the same time it was arranged to lower the quotation for ordinary steel plates for Holland and to reduce the price of ship plates for Cartel markets—that is, roughly speaking, for destinations

outside the British Empire. These appear to have been the only price changes confirmed at Brussels.

It is known, however, that there will be further meetings in London toward the end of July, when the quotations for the British Empire markets will come up for revision. The Continental steelmakers are anxious to lower their rates for Empire countries, but such a movement will be strongly opposed by the British, who adhere to a policy of price maintenance throughout 1938. The view of the British is that they do not wish to modify their own price structure, and that should the Continental works make changes it would necessitate a readjustment of the entire range of Cartel quotations.

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German Steel Output Aided by Scrap Imports

LONDON.—Germany's raw steel production, excluding that of Austria, continues to show a steady advance. Average daily production during May set up a fresh record at 75,852 tons, against 73,570 tons in April and 72,160 tons in March.

It is confidently believed that June's total production has touched the 2,000,000-ton level, but the official figures are not yet available. The improvement is mainly attributable to larger imports of scrap. The decline in the demand for scrap on the world markets has enabled Germany to import scrap in larger quantities than formerly and at much cheaper rates.

Germany's average monthly imports of scrap in 1937 totaled only 46,470 tons, against 99,184 tons in April this year and 102,863 tons in March. Scrap imports are continuing at a high level.

Russia Plans Iron And Steel Expansion

LONDON.—According to an announcement of the Russo-British Chamber of Commerce in the United Kingdom, during 1938 Russia plans to put into operation six new blast furnaces with an annual capacity of 2,620,000 tons of pig iron and 11 open-hearth furnaces capable of an aggregate annual output of 1,391,000 tons of steel.

American and British Firms Form Connections

LONDON. — Two announcements have recently been made concerning new links between American and British steel interests.

One of these concerns the formation of the Adamson-Alliance Co., London, with the object of combining the sales and manufacturing organizations of the steel works equipment department of Joseph Adamson & Co., Ltd., Hyde, Cheshire, and the Alliance Machine Co., Alliance, Ohio. The Adamson concern, founded in 1874, has specialized in steel works, cranes and charging machines, while the Alliance, founded in 1901, has a world-wide reputation for cranes and steel works equipment.

The other announcement was made at the annual meeting of Darwins, Ltd., Sheffield, makers of specialized steels, and was in amplification of a previous report on the firm's negotiations with American manufacturers. In the course of his annual address, H. L. Armstrong, chairman, stated that plans had been completed for embarking upon the manufacture of stainless steel of a special kind suitable for use in a very wide range of manufactures. To this end the company has concluded working agreements with two of the leading American concerns in this special field, the Superior Steel Co., Pittsburgh, and the Ludlum Steel Co., Watervliet, whereby Darwins will receive the benefit of the American companies' patents and technical knowledge. In addition to making stainless steels the American companies were, Mr. Armstrong said, producing many other products which lay within the scope of Darwins and could profitably be made at Sheffield.

"Under the supervision of the American companies," Mr. Armstrong added, "we have erected at Sheffield a cold rolling strip mill of the most modern design, the entire cost of which has been financed out of our own resources."

United States Smelting Refining & Mining Co., for many years one of the leading producers of silver and lead, has announced its entry into the field of high-grade zinc. Heretofore the zinc concentrates, mined at the company's Bingham properties near Salt Lake City, were sold to the Anaconda Copper Mining Co. Under a new arrangement, these will be refined by Anaconda for account of United States Smelting Refining & Mining Co., which will sell the resultant zinc to the trade.

"Labor's Road To Plenty"

ALLEN W. RUCKER has written a book under the above title, which deserves reading by all students of present-day employer-employee relations. The author, in this work, takes the position that the importation of the European Guild system and the popular present-day administrative ideas of Government regulation of industry are not conducive to the best interests of labor. Starting with these labor interests as a basis, he arrives at an extremely simple principle of labor compensation, designed to maintain the traditional American system

of freedom of enterprise and to assure rewards in proportion to individual worth.

The book contains much factual data concerning wages, prices and productivity and the author's conclusions are based on actual experience, rather than a *priori* reasoning.

"Labor's Road to Plenty" is published by the L. C. Page & Co., Boston.

New Data Book Issued On Molybdenum Steels

"**M**OLYBDENUM in Steel" is the title of a data book recently published by the Climax Molyb-

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denum Co., 500 Fifth Avenue, New York. The book is of the loose-leaf type and is composed of 13 sections which deal in considerable detail with the effect of molybdenum in both rolled and cast steel. The primary value of the book is that it brings together and correlates practically all of the more important information available on molybdenum steels. The physical characteristics of this type steel are particularly well covered.

Analyzing Problems of Engineering Economy

IN the newly revised edition just published of "Principles of Engineering Economy," Eugene L. Grant, Associate Professor of engineering economics at Stanford University has incorporated 20 years of teaching and consulting experience. This book presents, for the first time, a complete and usable procedure for analyzing

and solving problems of engineering economy.

The principles are stated by the case method of discussion, in which involved mathematical formulas are avoided. In simple language a practical technique is demonstrated for the selection from a number of possible alternatives of that solution of any problem which will combine most effectively the utmost engineering and economic advantages.

A thorough treatment is given of the economic aspects of replacing machines and equipment, and of the essential economic differences between public works and private enterprises. A definite pattern for engineering economy studies of various types is laid down from the author's consulting experience. One chapter is devoted solely to an explanation of methods whereby economy proposals may be more clearly stressed in various types of engineering reports and budgets.

Published by the Ronald Press, N. Y., 431 p., 17 illustrations, 43 tables; price \$3.75.



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SWOC Issues Booklet on Management and Employment

A HANDBOOK discussing low wages, waste elimination, poor executive team work, poor planning, speed-up, out-of-line wage rates, slack season unemployment, regularizing employment, and other working conditions has been issued by the SWOC to executives in plants where the union has contracts and also to lodge officials to help the latter in setting up bargaining plans.

In making the distribution, Philip Murray, SWOC head, said he hoped the booklet would promote a better understanding of the possibilities which may grow out of friendly and constructive relationship between the union and management.

Enlarged Edition of Hobart Welding Book

A LARGE amount of useful data of value to engineers, executives and designers, as well as to welding operators and supervisors and students, is given in the enlarged edition of "Arc Welding and How To Use It," by W. J. Chafee, issued recently by the Hobart Brothers Co., Troy, Ohio. This edition, the third, contains 340 pages, 5¼ x 8 in., and has 320

illustrations and some 25 tables. There are 23 chapters, arranged in six sections the titles of which include: general information; practical welding lessons; carbon arc welding and cutting; and instructions for welding gray and malleable iron, stainless steel, manganese steel, monel metal and nickel, and aluminum. A section devoted to special information includes standard steel shapes available for welding; typical flame-cut sections suitable for welding; A.W.S. welding symbols; S.A.E. steel numbering system; physical constants of elements, and metals; temperature interconversion tables; and a list of A.W.S. codes, standards and specifications. The price of the new book, which is well printed and attractively illustrated, is \$1.50 postpaid.

Dye Indicates Small Aluminum Content

VERY small amounts of aluminum have deleterious effects on many types of non-ferrous alloys, according to the Bureau of Standards. In some brasses and bronzes it reduces the ductility, increases brittleness, and in other ways acts unfavorably. In a large number of bearing metals, solders, and zinc alloys the A.S.T.M. limits the amount of aluminum to less than 0.005 per cent.

The reliable performance of a recently published method for the detection and determination of small amounts of aluminum depends upon the use of a dye of uniform and high quality. When John A. Scherrer and W. Harold Smith, chemists at the National Bureau of Standards, found that a suitable reagent could not be obtained either by purchase or preparation by procedures described in the literature, they devised a method for the preparation of the ammonium salt of aurintricarboxylic acid. This has proved to be an entirely satisfactory dye for use in the test for aluminum.

This Week on the Assembly Line

(CONTINUED FROM PAGE 54)

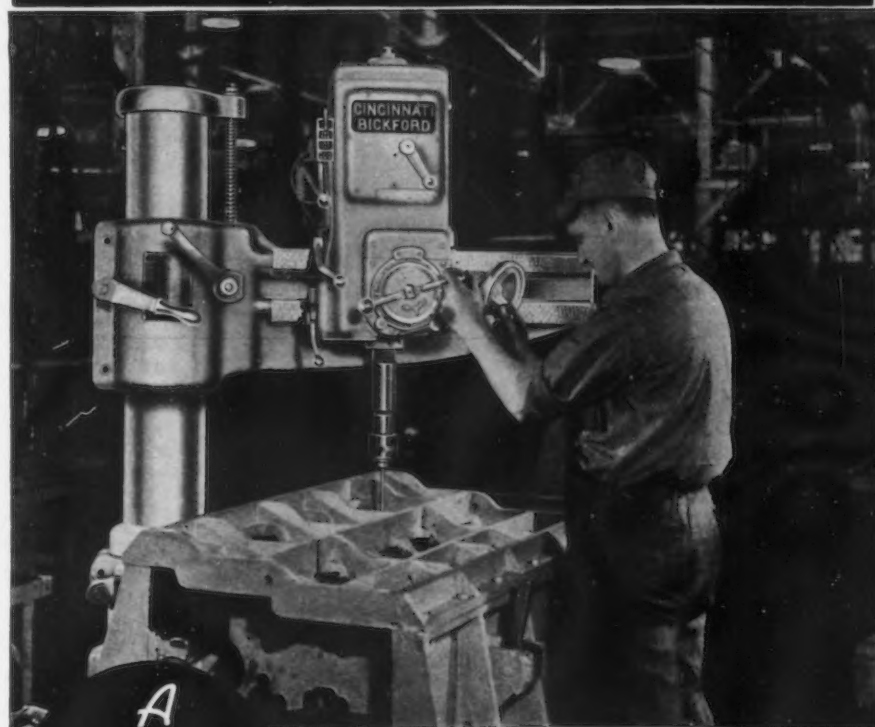
probably will be moved shortly to the new plant on Eight Mile Road, near the new Dodge truck factory. This is quite a change in Briggs plans. Originally the new building was intended for the production of automobile garnish moldings and other simi-

lar items of trim. In recent weeks, however, the large controlled-atmosphere annealing furnace has been taken apart at the Briggs' Mack Avenue plant and reassembled at the Eight Mile Road plant. It is also understood that all the equipment for enameling bathtubs and kitchen equipment is being moved to the new site as rapidly as possible.

Interest in streamlining automobiles is far from dead. The Chrysler Corp. has just put into operation the

auto industry's newest wind tunnel, capable of producing wind velocities up to 110 miles per hr. The tunnel is a closed return passage type that can be operated with the test section either open or closed. Automobile models used for the test range up to about 18 or 20 in. in length. It is equipped with a complete balance system to measure all of the wind forces acting on the car, including those that tend to lift the car or push it sideways. The tunnel makes use of a

CINCINNATI BICKFORD



**A
New
SUPER
SERVICE
RADIAL**

**...but already on the job
reaming and tapping
at Caterpillar Tractor Co.**

**2 1/2' SENSITIVE
HIGH SPEED
7 1/2" DIA. COLUMN
1-HP. DRIVING MOTOR
AUTOMATIC OILING
ANTI-FRICTION
THROUGHOUT**

The machine shown—one of 13 of this size and type in a modern tractor plant—is reaming holes and tapping holes in straight side of 4 cylinder 3 3/4" bore tractor cylinder blocks. The column of the drill which is 7 1/2" diameter, is mounted directly on the fixture.

Acceptance of these New Super Service Radials by this leading manufacturer for important production work is definite recognition of Cincinnati Bickford quality and the profitable, fast production which characterizes the operation of all Super Service Radials throughout the metal working industries.

Get all the details concerning these new profit makers in hole production. Write today.

The CINCINNATI BICKFORD TOOL COMPANY
OAKLEY CINCINNATI OHIO

novel 6-ft. controllable pitch propeller with four blades.

Almost at the same time, Ford Motor Co. has put into service a new "weather tunnel," the first of its kind ever built for automotive research. It will be used in conjunction with the company's three new test tracks at the old Ford airport where a million miles of tests have been driven between last Sept. 17 and April 22 of this year. The purpose of the Ford tunnel is twofold. First it makes it

possible to reproduce in a laboratory any kind of weather experienced anywhere on earth at any time of year. Secondly, it can be used as an aerodynamic tunnel to get the wind resistance of parts such as headlamps, fenders or other units that exert a definite "drag" at high speeds.

A 500-ton refrigerating system, powerful enough to maintain a temperature of 20 deg. below zero, is an important part of the equipment. Other units are a rain machine, a

wind and dust blower and a heating unit which will push temperatures up to 150 deg. above zero. Atmospheric pressure can be adjusted to duplicate any climatic condition. In addition, the humidity of the air in the tunnel and its oxygen content can be controlled. Alongside the tunnel is a cold chamber, capable of maintaining temperatures of 40 deg. below zero to test engines, oils, batteries and starters. This tunnel is a huge affair in a building 124 ft. long, 35 ft. wide and 14 ft. high. The test chamber is elliptical and 10 ft. in diameter, which is large enough to house a Ford transport bus.

In this chamber, air can be circulated as fast as 85 mi. per hr. The air is driven by a 400-hp. electric motor, turning a 10-ft., three-blade propeller. The vehicle to be tested is mounted with its rear wheels on a treadmill connected with a dynamometer. The car or truck is actually in operation during the test.

This unusual wind tunnel permits engineers to simulate the widest variety of conditions ever attempted in testing cars. From below sea level to mountain top heights, the atmosphere can be duplicated, with all varieties of weather from the hottest, dustiest day, to rain, sleet and ice. Dust storms can be created inside the test chamber, and during these tests the car can be put through any accelerating manoeuvres, starting, stopping, etc. The engineers can even simulate a hard push uphill with load or coasting downhill.



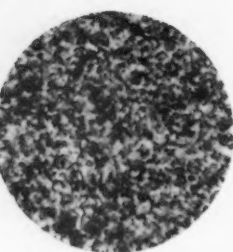
Note the uniformly accurate set of Tuf-flex teeth and their sharp edges, making for smooth clean cutting.

TUF-FLEX *can take it*

TUF-FLEX sure is tough. This sensational new-comer into the hack saw world already has the old-timers rubbing their eyes in amazement. There's nothing like it. It's not only mighty tough and flexible, but also super-hard. Abusive treatment on the thinnest sheets, tubing or gutter pipe, and punishing side strains mean nothing to it; the teeth don't strip and the blade just doesn't break. Equally effective on large sections.

The secret of its phenomenal success is a new alloy, exclusive with Millers Falls for hack saw use. That's why a blade with a back that Rockwells C 60 can be safely abused as shown above.

Tuf-flex is guaranteed to be the most economical general purpose blade ever developed. Its performance on any class of work is remarkable. A trial in your own shop is certain to convince you.



Photomicrograph of the superior alloy steel used in Tuf-flex blades showing remarkably uniform grain structure. Teeth have same grain structure as the body.



Write for new Catalog 42 today.

MILLERS FALLS COMPANY

Greenfield, Massachusetts

Keystone Steel & Wire Co. Has Many Old Employees

CHICAGO.—A report from the Illinois Manufacturers' Association reveals that 3 per cent of the 1200 to 1500 employees of the Keystone Steel & Wire Co., Peoria, Ill., have been with the company more than 25 years, 6 per cent 20 to 25 years, 14 per cent 15 to 20 years, 22 per cent 10 to 15 years, 24 per cent five to 10 years, and 31 per cent five years. About 60 per cent of the present workers could be termed middle-aged or elderly.

The Twenty-five Year Club boasts a membership of 43, and Mr. Sommers said next year 48 names will be on the roster; in 1940, 52 names; in 1941, 57 names; in 1942, 66 names, and in 1943 it will have 98 members.

New Financing Plan For Sheet & Tube

YOUNGSTOWN. — Directors of Youngstown Sheet & Tube Co. have called a special meeting of shareholders Aug. 30 for the following purposes:

To release preemptive rights of common shareholders on not exceeding 500,000 authorized and unissued common shares without par value, which may be issued from time to time within a period of one year from date of release, or issued in conversion of any securities of the company which may be created and issued within one year.

To authorize the directors to fix consideration for which not exceeding 500,000 common shares may be issued, and in connection with the creation and issue of securities to confer upon the holders of such securities the right to convert them into common shares of the company upon terms and conditions determined by the directors.

If the above proposals are approved by the shareholders, then to rescind the action taken at the special shareholders' meeting on Oct. 19, 1937, releasing the preemptive rights on 400,000 shares of the company.

In connection with further financing contemplated by the company, the shareholders of the company on Oct. 19, 1937, approved an increase in the authorized common shares of the company from two million to two and a half million shares and released preemptive rights of common shareholders on not exceeding 400,000 shares. Subsequent to this meeting further progress with new financing was postponed, owing to the general condition of business. The proposals to be considered at the Aug. 30 meeting will, if approved, place the company in a position to go ahead with the new financing when and as the board of directors may consider such action advisable, with the number of common shares which may be converted set at 500,000 instead of 400,000 as originally contemplated.

The board of directors fixed the close of business on July 16, 1938, as the record date for determination of shareholders entitled to notice of and to vote at such special meeting.

Following the meeting of the directors last week, no statement was issued on possible ways in which the new financing might be used, but it is generally believed improvements in

both ingot and finishing capacity will be made at Indiana Harbor. For one thing, a continuous strip mill is needed there to furnish material for the cold rolling strip-tin installations already completed.

Interlake Iron Corp. Ruled Not to Be a Public Utility

WASHINGTON. — The Securities and Exchange Commission has handed down an opinion that the Interlake Iron Corp. is not an electric utility company subject to provisions of the Public Holding Act of 1935. The SEC said that the corporation has one wholly owned-non-utility subsidiary, the Perry Furnace Co., and owns directly or indirectly a substantial interest in several coal and iron ore mining companies, but neither it nor its subsidiary makes any sales of electrical energy other than to the Toledo Edison Co., Toledo, Ohio. An SEC rule grants an automatic exemption to companies whose gross sales of electrical energy do not exceed \$100,000 a year.

Watson-Stillman Co. to Make British Equipment

THE Watson-Stillman Co., Roselle, N. J., announces that a contract has been made with Duncan Stewart & Co., Ltd., of Glasgow, Scotland, covering the manufacture for the English market of the Watson-Stillman lines of hydraulic horizontal extrusion presses, high speed metal forming presses, power presses, ingot strippers, and other equipment used by the heavy industries. In turn, the Watson-Stillman Co. will manufacture for the American market the Duncan Stewart lines of high speed steam hydraulic forging presses, vertical rod and tube extrusion presses, air bottle accumulators and similar equipment.

Army Orders 276 Aircraft Engines and 98 Planes

WASHINGTON. — The War Department recently awarded contracts for 276 aircraft engines to cost \$2,573,286. The Wright Aeronautical Corp. was awarded a \$922,860 contract for 108 engines; Pratt & Whitney division of the United Aircraft Corp., a \$622,535 contract for 117 engines; and the Allison Engi-

neering Corp., of Indianapolis, a \$987,891 contract for 40 engines.

The department also awarded contracts for 98 planes to cost \$11,859,910. The orders were described as the largest ever given by the Government for air fighting equipment except during the World War.

J. & L. Wins State Awards For 1937 Safety Records

A "CERTIFICATE OF MERIT" for a safety record in 1937 better than the average for the metal industry and several "certificates of honor" for departments with perfect safety records for the year have been awarded the Jones & Laughlin Steel Corp. by the Pennsylvania Department of Labor and Industry.

In a letter transmitting the certificates, George B. McDonough, supervising inspector of the department, said in part: "Your achievement for the year 1937 speaks for itself. It shows that the management and employees are vitally interested in safety. . . . We thank you for your fine cooperation and hope you will continue the splendid work."

TRADE NOTES.

Continental Machine Specialties, Inc., Minneapolis, Minn., has opened a new display room at 119 Lafayette Street, New York, where it is demonstrating some of the latest models of Doall contour machines.

Fonda, Johnstown and Gloversville Railroad has been sold for \$135,125 to the Rochester Iron & Metal Co., Rochester, N. Y., and the Auburn Rag & Metal Co., Auburn, N. Y. The material to be disposed of includes 6600 tons of 80-lb. rails, 400 tons of copper and miscellaneous railroad equipment.

General Time Service, 1507 W. Vliet Street, Milwaukee, has been organized to specialize in repairing and reconditioning of time equipment requiring the fabrication of obsolete parts, wheels, pinions, gears, etc.

Reynolds & Son, Inc., Barre, Vt., has been appointed distributor for the entire state of Vermont and Grafton and Sullivan counties in New Hampshire by the Bucyrus-Erie Co., South Milwaukee, Wis. This new distributor handles the complete line of Bucyrus-Erie shovels, draglines, clamshells, and lifting cranes, ranging from $\frac{3}{4}$ to 1 $\frac{1}{2}$ -yd. sizes.

Lewis-Shepard Sales Corp., Watertown, Mass., has appointed the following representatives for its line of material handling equipment: Wesley D. Low, P. O. Box 1124, Knoxville, Tenn.; Industrial Supply Co., 131 Motor Avenue, Salt Lake City, Utah, and J. W. Ralston Co., 1522 Fourth Avenue South, Seattle, Wash.

Bucyrus-Erie Co., South Milwaukee, has appointed Clapp Machinery Co., Groton, N. Y., distributor of Bucyrus-Erie shovels, draglines, clamshells and lifting cranes for the central portion of New York State.

Weirton Lawyer Barred by Labor Board Trial Examiner

WEIRTON.—Following a bitter exchange of words last week between National Labor Relations Board counsel and examiner and Weirton Steel Co.'s chief counsel at the "marathon" NLRB trial involving the Weirton Steel Co., the NLRB trial examiner has barred Clyde A. Armstrong, Weirton's chief lawyer, from further participation in the Labor Board hearing. This sudden move on the part of the NLRB examiner, which, incidentally, is just another climax in a series which have occurred regularly since the trial started almost a year ago, has aroused intense opposition on the part of Weirton merchants and workers who were to march on Steubenville, Ohio, as a protest against the NLRB action. The Weirton Employees Security

League, composed of Weirton Steel Co. employees, has asked for investigation of the entire NLRB proceedings which have taken place at Steubenville, and which have resulted in consistent verbal clashes and jangled nerves on the part of all participants.

The altercation resulting in the barring of Mr. Armstrong involved the postponement of a company witness' testimony and reached a climax when the NLRB trial examiner commanded Mr. Armstrong to sit down and refrain from making a statement. The trial examiner, in order to prevent the presentation of Mr. Armstrong's statement, adjourned the hearing and left the room. When the hearing was resumed a statement covering the barring of Mr. Armstrong was made.

..CAST IRON PIPE..

Ripon, Wis., plans new waterworks system with Federal aid and has engaged A. E. McMahon Engineering Co., Menasha, Wis., to make appraisal. C. H. Whiting is city clerk.

Fredonia, Wis., is about to ask for bids on \$80,000 waterworks and sewerage systems with Federal aid. A. E. McMahon Engineering Co., Menasha, Wis., is consulting engineer. John M. Demler is village clerk.

Manitowoc, Wis., has received PWA grant of \$269,018 toward proposed \$600,000 water purification plant, requiring considerable pipe. W. G. Kirchoffer, 22 North Carroll Street, Madison, Wis., is consulting engineer. A. H. Zander is city clerk.

Melrose, Wis., has applied for PWA funds for \$50,000 waterworks system designed by Frank J. Davy & Son, 1611 Main Street, La Crosse, Wis., consulting engineers.

Mentor, Ohio, will take bids July 18 on 525 tons of cast iron pipe for a water distribution system.

Sheffield, Ala., plans pipe line extensions in water system and other waterworks installation. Cost about \$100,000. Financing is being arranged through Federal aid. Lide & Adler, Woodward Building, Birmingham, are consulting engineers.

Narka, Kan., plans pipe lines for water system and other waterworks installation, including elevated steel tank and tower. Cost about \$40,000. A special election has been called July 15 to approve bonds for part of cost, remainder of fund to be secured through Federal aid. Paulette & Wilson, Farmers' Union Building, Salina, Kan., and 1006 Kansas Avenue, Topeka, Kan., are consulting engineers.

Richmond, Va., plans pipe line extensions and replacements in water system, and other waterworks installation. Cost about \$225,000. Part of fund will be secured through Federal grant. C. H. Whitefield is director of utilities.

Omaha, Tex., plans pipe lines for water system and other waterworks installation. Cost about \$35,000. Financing has been arranged through Federal aid. F. J. Von Zuben, Electric Building, Fort Worth, Tex., is consulting engineer.

Corrigan, Tex., plans pipe lines for water system and other waterworks installation. Special election has been called July 16 to approve bonds for \$38,000 for work.

Tucson, Ariz., has plans for pipe line extensions in water system, including three large steel tanks and other waterworks equipment. Cost about \$500,000, of which \$277,000 will be represented by bond issue and remainder through Federal grant. George W. Seeley is city engineer.

Mason City, Iowa, plans pipe line extensions and replacements in water system and other waterworks installation. Cost about \$120,000, of which \$54,450 will be a Federal grant. C. H. Stevens is city engineer.

Boone Mill, Va., plans main pipe line for water supply to new source about three miles from town limits, and distributing lines, also 200,000-gal. reservoir. Cost over \$50,000, of which about \$30,000 will represent a Federal grant. J. B. McCrary Engineering Corp., Journal Arcade Building, Knoxville, Tenn., is consulting engineer.

Brighton, Mich., plans pipe lines for water system and other waterworks installation. Cost about \$100,000. Financing has been arranged through Federal aid. Ayres, Lewis, Norris & May, Ann Arbor, Mich., are consulting engineers.

Schiller Park, Ill., plans pipe lines for water system and other waterworks installation. Cost about \$52,700, of which \$23,727 has been secured through Federal grant. Bids will be asked soon. Consoer, Townsend & Quinlan, 205 West Wacker Drive, Chicago, are consulting engineers.

Chicago Park District, Chicago, plans about 50,000 ft. for water system in Lincoln Park; also additional pumping machinery and auxiliary equipment at waterworks station on Mont-

rose Avenue. Cost \$1,128,800, of which \$504,818 will be Federal grant. R. H. Burke is engineer for district.

Redding, Cal., has awarded construction of water system to Oakland Sewer Construction Co., Oakland, Cal. Sub-contract for 1500 tons of 2, 6, 8, 12, and 18-in. pipe to United States Pipe & Foundry Co., San Francisco.

Santa Monica, Cal., has received low bid from American Cast Iron Pipe Co., Los Angeles, on 1000 ft. of 4-in., 5000 ft. of 6-in., and 5000 ft. of 8-in. class 250 pipe.

Union Rejects Pay Cut; Strike Still Goes on

CHICAGO.—The strike at the Chicago Hardware Foundry Co., North Chicago, Ill., is now in its sixth week and apparently no nearer a solution than at the outset. Last week 10 CIO pickets were asked to show cause why they should not be held for contempt of court for defying an injunction not to interfere with men wishing to enter the plant and return to work.

A plan of arbitration whereby management and union each select one man and the two agree on a third member was suggested, to which Edward Sherwin, president, agreed if the arbitrators were certified public accountants and examined the company's books before reaching a decision. Strikers should return to work at a 10 per cent reduction in pay while the negotiations were being carried on, in which case the company would accept any award made. The union, however, rejected the proposal to accept the pay cut and at this writing the situation is unimproved.

87 Employees of TCI Get Long-Service Medals

EIGHTY-SEVEN employees of the Tennessee Coal, Iron & Railroad Co. and affiliated companies in the Birmingham area were awarded medals for long service by the United States Steel Corp. during the second quarter of the current year.

Twelve employees were given 35-year medals, 30 received 30-year medals and 45 received 25-year recognition.

Among those given medals were C. E. Abbott, vice-president in charge of raw materials; Dr. Groesbeck F. Walsh, assistant superintendent of the department of health, and John H. Bowen, secretary to the president.

Government Calls Steel Wage Conference

In Apparent Effort to Stop Reductions

WASHINGTON. — President Roosevelt is reported to have ordered the hearing to determine prevailing minimum wages in the steel industry which has been called for July 25 in Washington before the Public Contracts Board of the Department of Labor. Back of the White House move is said to be the Steel Workers Organizing Committee, which, with strong Administration support, is anxiously seeking to head off slashes in wage rates, talk of which has become rather widespread since the recent reduction in steel prices.

An outstanding purpose of the forthcoming hearing, to be held by the Public Contracts Board under the Walsh-Healey Government Contracts Act, is to freeze the minimum steel wage of \$5 a day for common labor.

Preliminary to the hearing, announced by Assistant Secretary of Labor Charles V. McLaughlin, will be a meeting of an advisory panel of labor and management, which Mr. McLaughlin said will discuss matters informally before the public hearing.

Steel Executives Invited

Invited to serve on this panel are 10 prominent steel executives and Philip Murray, SWOC chairman. The steel executives invited are:

Benjamin F. Fairless, president, United States Steel Corp.

H. E. Lewis, chairman and president, Jones & Laughlin Steel Corp.

Henry A. Roemer, president, Pittsburgh Steel Co.

Henry D. Stott, vice-president, Wheeling Steel Corp.

Eugene G. Grace, president, Bethlehem Steel Corp.

Ernest T. Weir, chairman, National Steel Corp.

Tom M. Girdler, chairman, Republic Steel Corp. and president, American Iron and Steel Institute.

Frank Purnell, president, Youngstown Sheet & Tube Co.

P. D. Block, president, Inland Steel Co.

Raoul E. Desvernine, president, Crucible Steel Co. of America.

Should the panel be fully represented at the informal closed meeting, it would bring together for the first time since the so-called "Little Steel" strike of last summer, SWOC officials and a number of independent steel executives who have refused to sign SWOC agreements. In some quarters it is the view that one of the objects of the meeting is for this purpose, a form of CIO pressure through the Government to force at least informal negotiations with the union, supplemented later by the formal hearing.

Whether or not all steel executives on the panel will attend the preliminary meeting or the public hearing in person or content themselves with sending representatives or filing briefs was not known here. Any of the three courses can be followed under the law as indicated in the notice of the hearings sent out by Administrator L. Metcalfe Walling of the Public Contracts Board.

Roosevelt Ordered Hearing

While responsibility for the hearing is said to have come directly from the White House through SWOC suggestion, it was requested in a letter to Secretary of Labor Perkins, who is in Europe, by Mr. Murray.

"Numerous contracts are being awarded by the United States Government to corporations in this industry and we believe that additional protection would be afforded to the steel workers through the determination of such prevailing minimum wages," Murray said.

Neither Mr. Murray nor any Government official made any claims that steel wages actually have been cut as yet. There were vague references to reports that certain small steel companies were on the verge of reducing wages. The names of such companies were not given, but one source said they were not included in the list invited to make up the advisory panel. However, it was added that reports indicate definitely that, unless the steel business picks up sharply soon, wage

cuts or price increases, if not both, are inevitable, each of which the Administration strongly opposes.

Fresh reports of possible price increases have aroused Washington almost as much as have reports of possible wage cuts. Nevertheless, these reports have it that return to higher prices, possibly for the fourth quarter, will be necessary unless the industry begins to make profits. The new pricing policy is said to have narrowed chances of smaller companies to make profits because of the necessity of absorbing added freight charges. It is stated that price rises may be necessary even in the face of wage reductions. At present, however, it is the opinion of Washington that neither subject has been crystallized sufficiently to determine the future course of the bewildered steel industry. But Washington definitely is trying to prevent wage reductions over which it has direct limited control even if it cannot prevent price increases over which it does not have direct control.

Du Pont Makes Chrome Refinishing Kit

A NEW method for removing rust from chromium plated metals and protecting the chromium so it stays bright and shiny has been announced by the du Pont Co., Wilmington, Del. The new development will be marketed in the form of a chrome refinishing kit, which contains a tube of a specially formulated paste cleaner, a can of protective lacquer and a brush for applying the lacquer.

The lacquer is a clear, methacrylate product which dries in 15 min., forming an invisible film over the surface. The lacquer may be used for protecting bronze, brass, nickel and copper, which are subject to rust and tarnish. Particularly designed for chrome auto parts, the lacquer is also recommended for building hardware, bronze name plates, trophies, bank fixtures and metal objects which are exposed to weathering.

FABRICATED STEEL

... Lettings decline to 8000 tons from 16,855 tons last week ... New projects higher at 22,250 tons as against 19,000 tons a week ago ... Plate awards total 1815 tons.

NORTH ATLANTIC STATES

AWARDS

- 1225 Tons, New York, ventilating building, Queens-Manhattan Tunnel, to Lehigh Structural Steel Co., Allentown, Pa.; Cauldwell Wingate Co., general contractor.
- 1000 Tons, Brooklyn, school No. 213, to Lehigh Structural Steel Co., Allentown, Pa.
- 300 Tons, Turnbridge, Mass., two bridges, to Bethlehem Steel Co., Bethlehem, Pa.; P. J. Harvey & Son, Adams, Mass., contractors.
- 195 Tons, New York, Eastman Kodak building, World's Fair, to Ingalls Iron Works Co., Birmingham; James Stewart & Co., general contractors.
- 145 Tons, Brooklyn, welding shop, Brooklyn Navy Yard, to Lehigh Structural Steel Co., Allentown, Pa.
- 135 Tons, Salamanca, N. Y., State bridge RC-3956, to an unnamed fabricator.
- 125 Tons, Worcester, Mass., F. W. Woolworth store, to Bethlehem Fabricators, Inc., Bethlehem, Pa.
- 100 Tons, Castleton, Vt., State bridge, to Vermont Structural Co., Burlington, Vt.; P. C. Ricci, Newport, N. H., contractor.

THE SOUTH

- 1175 Tons, Hart County, Ky., bridge, to Nashville Bridge Co., Nashville, Tenn.
- 380 Tons, Bryan County, Okla., bridge, to J. B. Klein Iron & Foundry Co., Oklahoma City; Gaines Brothers general contractors.
- 320 Tons, Royalton, Va., State highway bridges, to Bethlehem Steel Co., Bethlehem, Pa.
- 180 Tons, Hunt County, Tex., State bridge, to Austin Brothers, Dallas, Tex.; McKenzie Construction Co., San Antonio, Tex., general contractor.
- 160 Tons, Louisville, Ky., repairs to Dam 43, to American Car & Foundry Co., Berwick, Pa.
- 150 Tons, Kopperston, Va., head house, etc., for Koppers Co., to Ohio Structural Steel Co., Newton Falls, Ohio.

CENTRAL STATES

- 450 Tons, Town of Lake, Milwaukee County, Wis., 1,000,000-gal. elevated steel water tank (including 140 tons of plates), to Pittsburgh-Des Moines Steel Co., Pittsburgh.
- 300 Tons, Marengo, Ind., State bridge, to Midland Structural Steel Co., Cicero, Ill.
- 275 Tons, Youngstown, Ohio, buckstays for Republic Steel Corp., to Whitehead & Kales Co., Detroit.
- 225 Tons, Murphysboro, Ill., Veteran's administration building, to Duffin Iron Works, Chicago.
- 215 Tons, Gould City, Mich., bridge, to American Bridge Co., Pittsburgh.

- 195 Tons, Wyandotte, Mich., sewage disposal plant, to Whitehead & Kales Co., Detroit.

- 187 Tons, Wyandotte, Mich., sewage disposal plant, to Whitehead & Kales Co., Detroit. W. E. Wood Co., general contractor.

- 130 Tons, Willoughby, Ohio, administration building Andrews School for Girls, to Kilroy Structural Steel Co., Cleveland.

- 125 Tons, Maxwell, Ind., State bridge, to Midland Structural Steel Co., Cicero, Ill.

- 110 Tons, Ypsilanti, Mich., Horace Rackham School, to an unnamed fabricator; W. E. Wood Co., general contractor.

- 105 Tons, Kalamazoo, Mich., power plant extension, to Kalamazoo Foundry & Machine Co., Kalamazoo.

- 100 Tons, Cleveland, crane runway for Park Drop Forge Co., to Mooney Iron Works, Cleveland.

NEW STRUCTURAL STEEL PROJECTS

NORTH ATLANTIC STATES

- 3500 Tons, New York, contract No. 20, elevated highway.
- 1300 Tons, Meriden and Shelton, Conn., infirmary buildings.
- 460 Tons, New York World's Fair building for State of Florida.
- 450 Tons, Washington, Bancker Junior High School.
- 370 Tons, Port Richmond, S. I., addition to high school.
- 315 Tons, Concord, N. H., State office building.
- 250 Tons, Geneva, N. Y., Y.M.C.A. building.
- 125 Tons, Boston, Boston University business administration building.
- 100 Tons, Newton, Mass., Nurses' Home.

THE SOUTH

- 3250 Tons, Florence, Ala., bridge; bids in.
- 270 Tons, Greenwood, Ky., I-beam span State bridge.

CENTRAL STATES

- 680 Tons, Kenosha, Wis., track elevation, Chicago & North Western Railway Co., Jutton-Kelly Co., 828 North Broadway, Milwaukee, low bidder at \$169,613.44.
- 465 Tons, Brighton, Ohio, railway bridge No. 31.
- 400 Tons, Streator, Ill., Owens-Illinois Glass Co., factory addition; bids July 15.
- 205 Tons, Dayton, Ohio, Veterans' building, N. P. Severn Co., Chicago, general contractor.
- 125 Tons, Mercer County, Ohio, State bridge.

WESTERN STATES

- 9430 Tons, Kennett, Cal., Shasta Dam; bids before Aug. 15 by Bureau of Reclamation.

- 5000 Tons, Redding, Cal., railroad bridge, American Bridge Co., Pittsburgh, low bidder.

- 275 Tons, Alaska, Matanuska River bridge, Department of Interior.

- 180 Tons, Colfax, Cal., overpass; bids July 27.

- 100 Tons, Los Angeles, Swift & Co. plant; Austin Co., Los Angeles, general contractor.

FABRICATED PLATES

AWARDS

- 660 Tons, Hiwassee Dam, N. C., two penstocks, to Chicago Bridge & Iron Works, Chicago.

- 600 Tons, Spokane, Wash., 2500 ft. 24-in. o.d. pipe, to Steel Tank & Pipe Co., Portland, Ore.

- 415 Tons, Buzzards Bay, Mass., three gas holders for Buzzards Bay Gas Co., to Western Gas Construction Co., Fort Wayne, Ind.

- 140 Tons, Town of Lake, Milwaukee County, Wis., 1,000,000-gal. elevated steel water tank to Pittsburgh-Des Moines Steel Co., Pittsburgh, at \$144,900. (Original low bid of same firm opened May 17 at \$149,600 was rejected. New bids were opened June 30.)

NEW PROJECTS

- 3000 Tons, Grand Coulee Dam, Wash., conduit linings (Specification 789); Berkeley Steel Construction Co., Berkeley, Cal., low bidder on Item 2; Chicago Bridge & Iron Works, Chicago, low bidder on Item 1.

SHEET PILING

NEW PROJECTS

- 110 Tons, Port Huron, Mich., Coast Guard station; bids July 14.
- 100 Tons, Fairport, Ohio, Coast Guard station; bids July 20.

RAILROAD BUYING

Southern Railway has received authority to issue \$13,500,000 in equipment trust certificates to purchase 5550 freight cars from the following makers: Mount Vernon Car Mfg. Co., 1000 box, 200 furniture and 50 mill gondola cars; Pullman-Standard Car Mfg. Co., 2000 box cars; American Car & Foundry Co., 1250 high-side gondola cars; Pressed Steel Car Co., Inc., 700 low-side gondola cars; Ralston Steel Car Co., 250 stock cars; Greenville Steel Car Co., 100 flat cars. ICC has under consideration Southern application to borrow \$500,000 from RFC for purchase of four diesel-electric or gasoline passenger trains.

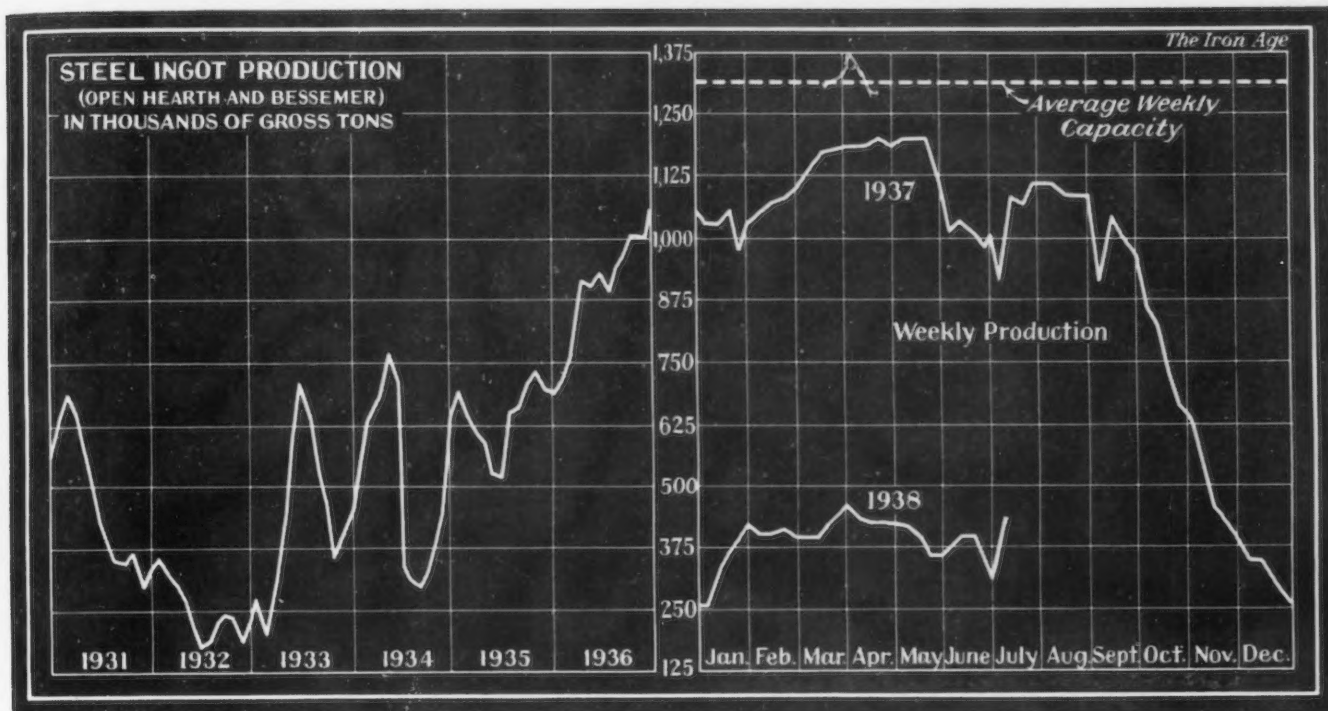
American Car & Foundry Motors Co. announces receipt of orders for five motor coaches from Florida Motor Lines Corp., Jacksonville, Fla.; four from Carolina Coach Co., Raleigh, N. C., and one from Plymouth & Brockton Street Railway, Plymouth, Mass.

RAILS AND TRACK SUPPLIES

Cleveland Railway Co., Cleveland, has awarded 200 tons of girder rails to Carnegie-Illinois Steel Corp., Pittsburgh.

Thermal Processes, Inc., 405 East Oliver Street, Baltimore, has been formed to manufacture and market a recently developed line, on which patent protection is being secured, of mechanical and steam atomizing oil burners for industrial heating operations. E. B. Dunkak is president of Thermal Processes, Inc.

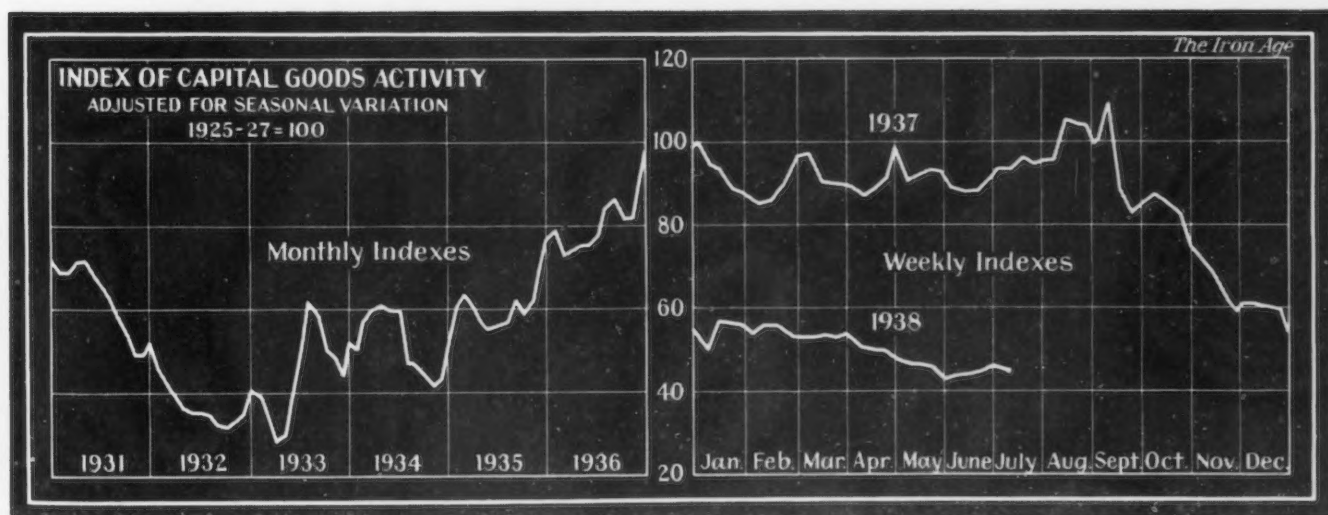
Ingot Production Rises to 32 Per Cent



District	Ingots	Production, Per Cent of Capacity	CURRENT WEEK	Pittsburgh	Chicago	Valleys	Philadelphia	Cleveland	Wheeling	Buffalo	Detroit	Southern	S. Ohio River	Western	St. Louis	East-ern	Aggregate
			24.0	24.0	32.5	30.0	23.0	21.0	54.0	34.0	29.5	38.5	28.5	30.0	25.5	50.0	32.0
			16.0	24.0	21.0	19.0	12.0	48.0	33.0*	29.5	43.0	39.0	30.0	22.0	10.0	23.0	

* Revised.

Capital Goods Output Curtailed by Holidays



THE curtailment of automobile and steel ingot production in the past holiday week was substantially greater than the normal holiday reduction and caused THE IRON AGE index of capital goods activity to decline 1.2 points to 44.7 per cent of the base average. The brightest spot in the week's statistics was the heavy construction awards. The dollar value of the week's awards was \$78,322,000, or 17 per cent higher than the preceding week. The cumulative total of these awards for the present year to date is \$1,333,253,000, only 2.5 per cent below the total of the comparable period of 1937. Public projects continue to account for the bulk of construction work.

	Week Ended July 9	Week Ended July 2	Comparable Week	
			1937	1929
Steel ingot production ¹	33.5	39.0	100.0	141.4
Automobile production ²	29.3	38.8	120.7	127.3
Construction contracts ³	62.2	57.1	71.0	119.2
Forest products carloadings ⁴	51.7	48.9	77.6	124.8
Production and shipments, Pittsburgh District ⁵	46.8	45.6	102.8	130.9
Combined index	44.7	45.9	94.4	128.7

Sources: 1. THE IRON AGE; 2. Ward's Automotive Reports; 3. Engineering News-Record; 4. Association of American Railroads; 5. University of Pittsburgh.

...SUMMARY OF THE WEEK...

... Government calls steel wage conference for July 25.

o o o

... No reduction expected until this meeting has been held.

o o o

... Steel operations up, scrap higher; buying not much better.

THE Federal Government has again taken a hand in the steel situation by the calling of a conference on wages July 25 to which 10 leading steel company executives are invited. The avowed object is to maintain the \$5 a day minimum wage for common labor, but it is widely supposed that efforts will be exerted to prevent wage reductions in any class of steel mill labor. Called by the Public Contracts Board of the Department of Labor, at the request of the Steel Workers Organizing Committee, the conference is reported to have been ordered by President Roosevelt.

Reports of possible price increases in steel and pig iron are said to have aroused as much opposition in Washington as exists against wage reductions. Meanwhile, the studies that steel companies have been making of the new situation brought about by elimination of basing point differentials, together with price reductions, point to heavy losses in the third quarter with or without a wage cut. Efficiently managed companies which had figured their break-even point at about 40 per cent believe that operations well above 50 per cent will now be necessary to stop losses.

Despite rumors of impending wage reductions, no formal action has been taken by a major steel company. In view of the Washington wage conference, it is doubted whether any step looking to a reduction will be taken before that date.

Meanwhile a still somewhat bewildered steel industry and its customers are trying to figure out how the new situation will affect them. Under the new set-up, some mills will lose money on a large percentage of their orders. One immediate effect of the change is that some mills will be inclined to pass up small and unattractive business if the shipping distance means too much freight absorption.

ALTHOUGH steel ingot production has rebounded sharply from 23 per cent last week to 32 per cent this week, new business has not

improved in like degree, some of the higher production being accounted for by replenishment of raw steel stocks. However, sentiment and prospects are improved.

A fairly large volume of third quarter contracting has been done in pig iron, but much of it is speculative buying induced by reports that the price reduction had gone too deep and that an advance of \$1 a ton might soon follow. The pig iron contracting has not been followed by an important increase in shipments. Jobbing foundries are being asked to pass along the decreases to their customers in lower prices for castings.

Further price changes during the week include the establishment of Granite City, Ill., as a basing point on sheets, with prices \$2 a ton above the Gary base; reductions in prices of bolts and nuts amounting to 5 per cent; the adoption of an arbitrary base at Detroit on cold rolled strip, requiring the absorption of \$2.40 a ton freight by some mills; light rails are off \$3 a ton and high duty steel car wheels have been reduced \$2 each.

In the Southwest lower prices for pipe will be available to oil companies through the establishment of mill depots at Houston which are passing along a freight saving of about \$5 a ton brought about by water movement. Heretofore the all-rail freight rate of 72c. a 100 lb. was added to the Pittsburgh price, but this has been reduced to the 47.5c. water rate.

THE scrap market acts as if improvement in steel production were just around the corner. No. 1 heavy melting steel has risen \$1 a ton at Pittsburgh to a range of \$14 to \$14.50. A Pittsburgh mill, self contained as to scrap, sold 5000 tons of a grade slightly better than No. 1 at \$15. The Chicago price is up 50c. THE IRON AGE scrap composite has risen to \$13.08, the highest since early April.

The most promising prospect of new steel business other than that for Government projects is the automobile industry whose improved sales outlook may hasten production of new models. Steel for initial runs is expected to be purchased before the end of July. Railroad buying on a wide scale is still not in sight, but upward of 70,000 tons of steel for 5550 Southern Railway cars is being released this week and will give several mills better rollings. Structural steel lettings in the week dropped to 8000 tons, probably a reflection of hesitation because of price changes. However, new structural projects total 22,500 tons, and there were lettings of about 16,000 tons of reinforcing bars, of which 15,000 tons is for a housing project in the Bronx for the Metropolitan Life Insurance Co., New York. Reinforcing steel inquiries total 14,500 tons.

A Comparison of Prices

Market Prices at Date, and One Week, One Month, and One Year Previous
Advances Over Past Week in Heavy Type, Declines in Italics

Rails and Semi-finished Steel

Per Gross Ton:	July 12, 1938	July 6, 1938	June 14, 1938	July 13, 1937
Rails, heavy, at mill	\$42.50	\$42.50	\$42.50	\$42.50
Light rails, Pittsburgh	43.00	43.00	43.00	43.00
Re-rolling billets, Pittsburgh	34.00	34.00	37.00	37.00
Sheet bars, Pittsburgh	34.00	34.00	37.00	37.00
Slabs, Pittsburgh	34.00	34.00	37.00	37.00
Forging billets, Pittsburgh	40.00	40.00	43.00	43.00
Wire rods, Nos. 4 and 5, P'gh	43.00	43.00	47.00	47.00
	Cents	Cents	Cents	Cents
Skelp, grvd. steel, P'gh, lb.	1.90	1.90	2.10	2.10

Finished Steel

Per Lb.:	Cents	Cents	Cents	Cents
Bars, Pittsburgh	2.25	2.25	2.45	2.45
Bars, Chicago	2.25	2.25	2.50	2.50
Bars, Cleveland	2.25	2.25	2.50	2.50
Bars, New York	2.59	*2.59	2.81	2.78
Plates, Pittsburgh	2.10	2.10	2.25	2.25
Plates, Chicago	2.10	2.10	2.30	2.30
Plates, New York	2.29	2.29	2.55	2.53
Structural shapes, Pittsburgh	2.10	2.10	2.25	2.25
Structural shapes, Chicago	2.10	2.10	2.30	2.30
Structural shapes, New York	2.27	2.27	2.52	2.5025
Cold-finished bars, Pittsburgh	2.70	2.70	2.90	2.90
Hot-rolled strips, Pittsburgh	2.15	2.15	2.30	2.40
Cold-rolled strips, Pittsburgh	2.95	2.95	3.10	3.20
Sheets, galv., No. 24, P'gh	3.50	3.50	3.65	3.80
Sheets, galv., No. 24, Gary	3.50	3.50	3.75	3.90
Hot-rolled sheets, No. 10, Pittsburgh	2.15	2.15	2.30
Hot-rolled sheets, No. 10, Gary	2.15	2.15	2.40
Cold-rolled sheets, No. 20, Pittsburgh	3.20	3.20	3.35
Cold-rolled sheets, No. 20, Gary	3.20	3.20	3.45
Wire nails, Pittsburgh	2.45	2.45	2.75	2.75
Wire nails, Chicago dist., mill	2.45	2.45	2.80	2.80
Plain wire, Pittsburgh	2.60	2.60	2.90	2.90
Plain wire, Chicago dist. mill	2.60	2.60	2.95	2.95
Barbed wire, galv., Pittsburgh	3.20	3.20	3.40	3.40
Barbed wire, galv., Chicago dist. mill	3.20	3.20	3.45	3.45
Tin plate, 100-lb. box, P'gh	\$5.35	\$5.35	\$5.35	\$5.35

*Corrected.

On export business there are frequent variations from the above prices. Also in domestic business, there is at times a range of prices on various products, as shown in our detailed price tables.

Pig Iron

Per Gross Ton:	July 12, 1938	July 6, 1938	June 14, 1938	July 13, 1937
No. 2 fdy., Philadelphia	\$21.84	†\$21.84	\$25.84	\$25.76
No. 2, Valley furnace	20.00	20.00	24.00	24.00
No. 2, Southern Cin'ti	†20.06	†20.06	23.89	23.69
No. 2, Birmingham	16.00	†16.00	20.38	20.38
No. 2, foundry, Chicago*	20.00	20.00	24.00	24.00
Basic, del'd eastern Pa.	21.34	†21.34	25.34	25.26
Basic, Valley furnace	19.50	19.50	23.50	23.50
Malleable, Chicago*	20.00	20.00	24.00	24.00
Malleable, Valley	20.00	20.00	24.00	24.00
L. S. charcoal, Chicago	28.34	28.34	30.34	30.04
Ferromanganese, seab'd, car-lots	92.50	92.50	102.50	102.50

*The switching charge for delivery to foundries in the Chicago district is 60c. per ton.
†Corrected.

Scrap

Per Gross Ton:	July 12, 1938	July 6, 1938	June 14, 1938	July 13, 1937
Heavy melting steel, P'gh	\$14.25	\$13.25	\$10.75	\$19.50
Heavy melting steel, Phila.	13.25	13.25	12.00	19.25
Heavy melting steel, Ch'go.	11.75	11.25	10.25	16.75
Carwheels, Chicago	13.00	12.50	12.00	18.25
Carwheels, Philadelphia	14.75	14.75	14.75	19.75
No. 1 cast, Pittsburgh	14.75	14.25	13.25	19.25
No. 1 cast, Philadelphia	15.75	15.25	14.25	20.25
No. 1 cas, Ch'go (net ton)	11.75	11.25	10.25	15.25
No. 1 RR. wrot., Phila.	15.25	15.25	15.25	19.75
No. 1 RR. wrot., Ch'go (net)	9.75	9.25	7.75	15.50

Coke, Connellsville

Per Net Ton at Oven:	July 12, 1938	July 6, 1938	June 14, 1938	July 13, 1937
Furnace coke, prompt	\$3.75	\$3.75	\$3.75	\$4.35
Foundry coke, prompt	4.75	4.75	4.75	5.00

Metals

Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Electrolytic copper, Conn.	9.75	9.75	9.00	14.00
Lake copper, New York	9.875	9.875	9.125	14.12½
Tin (Straits), New York	42.875	43.625	38.70	60.00
Zinc, East St. Louis	4.75	4.75	4.00	7.00
Zinc, New York	5.14	5.14	4.39	7.35
Lead, St. Louis	4.75	4.75	3.85	5.85
Lead, New York	4.90	4.90	4.00	6.00
Antimony (Asiatic), N. Y.	14.00	14.00	14.00	14.75

The Iron Age Composite Prices

July 12, 1938
One week ago
One month ago
One year ago

Finished Steel

2.300c. a Lb.
2.300c.
2.487c.
2.512c.

Based on steel bars, beams, tank plates, wire, rails, black pipe, sheets and hot-rolled strip. These products represent 85 per cent of the United States output.

	HIGH	LOW
1938	2.512c., May 17	2.300c., July 6
1937	2.512c., Mar. 9	2.249c., Jan. 4
1936	2.249c., Dec. 28	2.016c., Mar. 10
1935	2.062c., Oct. 1	2.056c., Jan. 8
1934	2.118c., Apr. 24	1.945c., Jan. 2
1933	1.953c., Oct. 3	1.792c., May 2
1932	1.915c., Sept. 6	1.870c., Mar. 15
1931	1.981c., Jan. 13	1.883c., Dec. 29
1930	2.192c., Jan. 7	1.962c., Dec. 9
1929	2.223c., Apr. 2	2.192c., Oct. 29
1928	2.192c., Dec. 11	2.142c., July 10
1927	2.402c., Jan. 4	2.212c., Nov. 1

Pig Iron

\$19.61 a Gross Ton
19.61
23.25
23.25

Based on average basic iron at Valley furnace and foundry irons at Chicago, Philadelphia, Buffalo, Valley and Southern iron at Cincinnati.

	HIGH	LOW
23.25, June 21	\$19.61, July 6	
23.25, Mar. 9	20.25, Feb. 16	
19.73, Nov. 24	18.73, Aug. 11	
18.84, Nov. 5	17.83, May 14	
17.90, May 1	16.90, Jan. 27	
16.90, Dec. 5	13.56, Jan. 3	
14.81, Jan. 5	13.56, Dec. 6	
15.90, Jan. 6	14.79, Dec. 15	
18.21, Jan. 7	15.90, Dec. 16	
18.71, May 14	18.21, Dec. 17	
18.59, Nov. 27	17.04, July 24	
19.71, Jan. 4	17.54, Nov. 1	

Steel Scrap

\$13.08 a Gross Ton
12.58
11.00
18.50

Based on No. 1 heavy melting steel quotations at Pittsburgh, Philadelphia and Chicago.

	HIGH	LOW
14.00, Jan. 4	\$11.00, June 7	
21.92, Mar. 30	12.92, Nov. 16	
17.75, Dec. 21	12.67, June 9	
13.42, Dec. 10	10.33, Apr. 23	
13.00, Mar. 13	9.50, Sept. 25	
12.25, Aug. 8	6.75, Jan. 3	
8.50, Jan. 12	6.43, July 5	
11.33, Jan. 6	8.50, Dec. 29	
15.00, Feb. 18	11.25, Dec. 9	
17.58, Jan. 29	14.08, Dec. 3	
16.50, Dec. 31	13.08, July 2	
15.25, Jan. 17	13.08, Nov. 22	

...PITTSBURGH...

... Some steel producers believe next price move will be upward ... More than 70,000 tons to be specified at once for Southern Railway cars ... Steel scrap higher.

PITTSBURGH, July 12.—With recent price cuts having discounted practically all price weakness which existed previous to last week's announcements, observers are reasonably certain that steel prices have reached bottom. In fact, some producers are of the opinion that the next move might be upward to help compensate for the exceptionally heavy cost placed on various mills due to necessity of increased freight absorption. Such conclusions, however, are tentative and depend entirely on the volume of new business and the disposition of the steel wage rate question in the future.

Operations in the Pittsburgh district have rebounded eight points this week to 24 per cent of capacity while the Wheeling-Weirton rate is up six points to 54 per cent.

The volume of incoming business was influenced somewhat during the past week by the holiday, but actual orders placed were greater than had been anticipated. The recent increases registered in sales of flat rolled products are holding, and specifications in this category are about even with a month ago.

Steel for the 550 Southern Railway freight cars is expected to be ordered this week or next by car builders following clarification of financial details. The breakdown of the steel requirements indicates approximately 65,000 tons of plates, shapes, bars, sheets and strip and 8500 tons of axles.

In line with recent reductions light steel rails have been reduced \$3 a ton. High-duty steel car wheels have been reduced \$2 each.

No. 1 heavy melting scrap is up \$1 a ton, being quotable at \$13.50 to \$14 to \$14.50, but sentiment is not as bullish as a week ago among brokers and dealers.

Pig Iron

Following the holidays, new business is in slightly better volume than during the past several weeks. The increases, however, are not as great as those reported in other districts.

Semi-Finished Steel

New business is about on a par with a week ago, although some slight improvement is anticipated soon owing to the better volume of finished flat rolled bookings. Replenishment in some cases may be also expected following mid-year inventory taking.

Bars, Plates and Shapes

Although not large, a fair-sized improvement has materialized in hot rolled bar bookings, with orders emanating from miscellaneous and jobber sources. Some automobile clean-up specifications have been received. With the majority of structural projects and awards representing publicly financed jobs, the total number is about the same as in recent weeks. American Bridge Co. recently obtained a contract involving 2000 tons of material for widening a New York City viaduct.

Reinforcing Bars

New projects and awards continue scarce as contractors and jobbers alike study new pricing policies.

Tin Plate

Tin plate operations this week are estimated at a shade under 35 per cent. Acreage on many vegetables is less than a year ago but the yield is still considerably dependent on weather conditions. Tin plate specifications during the past week were no better than a week ago.

Cold Finished Bars

Although business has shown some increase since the \$4 reduction in cold finished carbon bars, the improvement is ascribed as much to low inventories and a better-than-expected amount of small clean-up orders from automobile makers than it is to the price reductions.

Sheets and Strip

Reflecting not only an increase in the number of consumers but also slightly larger tonnage, sheet bookings so far this month are running equal to or greater than the volume placed during the same period in June. Business in June was considerably better than in May. The improvement is widespread, not being confined to any one specific consuming line, although it does involve further automotive clean-up orders.

Tubular Goods

Oil-country goods specifications are running less than the volume placed during the same number of days in June. This condition continues to reflect the falling off in drillings.

Wire

Both manufacturers' and merchant wire specifications have declined somewhat in the past few weeks. Some of this leveling off may be due to the confusion surrounding price and basing point announcements. A fair portion of the drop, however, can be ascribed to seasonal fluctuations, especially in the merchant wire classification.

Weekly Booking of Construction Steel

	Week-Ended				Year to Date	
	July 12, 1938	July 6, 1938	June 14, 1938	July 13, 1937	1938	1937
Fabricated structural steel awards	8,000	16,855	22,500	13,250	365,225	669,740
Fabricated plate awards	1,815	310	660	1,170	71,050	77,050
Steel sheet piling awards	0	12,500	0	0	28,495	30,520
Reinforcing bar awards	15,930	1,425	5,025	1,610	135,855	132,695
Total Lettings of Construction Steel..	25,745	31,090	28,185	16,030	600,625	910,005

.....CHICAGO.....

... Ingot production rebounds sharply after holiday week ... New business not yet gaining though sentiment is improved ... Trade looks for higher prices if wage advance does not come ... Scrap prices continue to rise.

CHICAGO, July 12.—Ingot production rebounded sharply this week from the July 4 figure to 32½ per cent of capacity, a gain of eight and one-half points from last week, and up five and one-half points from the previous seven-day period. All but two mills in the district increased their production over that of the week prior to the holiday.

New business has not yet been affected by the lower prices and equalized basing points. Though sentiment is vastly improved and much of the previous reluctance to buy ahead has been removed, sales do not reflect this better feeling because of the great amount of confusion still existing following the recent changes. Buyers are now faced with the problem of investigating every available source of supply in order to obtain the best possible price, while sellers likewise must figure the position of each customer with regard to nearby competitors.

Local mills are determining what policy to follow in pursuing business in various markets, as some will be unable to serve old customers because of the lower prices and the greatly increased freight absorption necessary in some instances.

That the third quarter will not be favorable from an earnings standpoint is an accepted belief here now. Since buyers have not responded to the come-on urge of lower prices, either wages must be cut or prices increased in order to improve the financial condition of the mills. Under the present setup some mills will lose money on a large percentage of their orders. Events in Washington early this week indicate the Administration is taking a determined stand against steel wage cuts, which points to the possibility of higher prices.

Bids are being asked by the Bureau of Reclamation before Aug. 15 on steel requirements for the Shasta Dam, Kennett, Cal., to include 13,550 tons of reinforcing steel, 9430 tons of structural shapes, 5000 tons of rails and accessories for track relocating,

1915 tons of gates and penstocks, 5050 tons of pipe and 1000 tons of turbines.

Orders for some of the 70,000 tons of steel for the Southern Railway order of 5550 cars are being released this week by the various car builders concerned.

Scrap prices still are rising, heavy melting being quoted at \$11.50 to \$12 this week, a boost of 50c. a ton which has extended to the entire list.

Pig Iron

Third quarter contract buying is still proceeding at a good rate. Unless shipments increase accordingly, this activity, of course, is meaningless. No important upward trend in melt has been noticed but late summer and early fall are expected to bring a decided upturn. Many foundries have been shut down entirely for vacations the first half of July.

Plates, Sheets and Strip

Releases of steel for the Southern Railway's 5500 cars are now coming through, and some of the steel requirements may find their way to local mills. Early test runs on 1939 automobiles should soon be taking small sheet and strip tonnages, which in a few weeks are expected to assume important proportions as regular production on next year's cars begins.

Bars

No large tonnages of bars are in demand from local consuming plants. Farm equipment manufacturers are shut down in some cases and operating only moderately in others.

Structural Shapes and Reinforcing Bars

Federal funds from the latest pump priming move are being felt in construction steel. Many Middle Western cities and towns are receiving PWA projects, nearly all of which require shapes and reinforcing bars. The predominance of public work among the construction awards and

inquiries, plainly evident during the winter and spring, will now become increasingly noticeable.

Warehouse Business

Orders are not greatly better but sentiment is much improved, according to leading jobbers here. Sales are being made of material which has not been purchased in some time, indicating renewal of confidence in certain lines. An upturn in warehouse demand is expected the end of this week.

Wire and Wire Products

Business is not yet showing an improvement because of lower prices and basing point equalization. Sentiment is unusually good however and late August is expected to see the translation of this feeling into good demand.

Oil-Country Pipe Lower at Houston

LEADING producers of oil-country pipe have announced to the trade that sales at Houston, Tex., will henceforth be made on a mill stock basis. The delivered price in Houston has heretofore been figured on a basis of the Pittsburgh price plus all-rail freight of 72c. per 100 lb. However, barge shipments are now being made at 47.5c. per 100 lb., and the difference, \$4.90 a ton, will be passed along to the buyer.

This situation will call for the carrying of larger stocks of pipe at Houston. The National Tube Co. is to spend about \$250,000 on the construction of a new warehouse. It is expected that some other steel companies may lease or build warehouses in that city.

Labor Board Reopens Republic Steel Case

WASHINGTON.—In a further attempt to bring its procedure into line with the Supreme Court's Kansas City stockyard decision, the National Labor Relations Board has reopened its case against Republic Steel Corp. by issuing an intermediate report charging violation of the Wagner Act.

The new findings, similar to a ruling issued on April 9, 1938, but later withdrawn after the Kansas City decision, require the company to reinstate 5000 strikers in its Ohio plants and disestablish its employee representation plan.

..BIRMINGHAM..

... Pig iron buying movement starts in South ... Steel business lagging.

BIRMINGHAM, July 12.—A new wave of pig iron buying, after months of stagnation, has followed the recent price reduction of \$4 a ton. New tonnage has reached very encouraging levels and buyers are con-

tinuing to respond to the new market. There has also been a pickup in shipments but these are more limited as melters are still ordering out iron conservatively.

Demand last week for wire products and sheets also showed marked improvement, but heavy products, with the exception of concrete bars, are not yet very active.

The full benefit of the new Birmingham base on the current market is expected to develop slowly as the trade in general is still con-

sidering the various new angles that have arisen.

On July 8 the Virginia Bridge Co. was low bidder for the steel superstructure of the new Tennessee river highway bridge between Florence and Sheffield, with a bid of \$394,000. About 3500 tons of steel will be required. This project will not be ready for the steel for a long while.

The approval last week by the Interstate Commerce Commission of the Southern Railway application for an RFC loan means that the car orders of the railroad are now ready for release. The Bessemer plant of the Pullman-Standard Car Mfg. Co. received an award of 2000 box cars, dependent on the approval of the loan.

Last week 10 open hearth units were active. Ten are also scheduled this week, four at Fairfield, two at Ensley and four at Gadsden.

Woodward Iron Co. has reopened its Dolomite coal mine, closed since May 2. Initial re-employment was 462, which will be increased to 550 shortly.

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Engineers and Manufacturers
HOLYOKE • MASSACHUSETTS

....BUFFALO....

... Mill operations hold recent improvement ... Pig iron buying gains.

BUFFALO, July 12.—Mills continue to maintain the increased level of operations established recently. Bethlehem's Lackawanna plant is operating 11 open-hearths, Republic Steel Corp. two, and Wickwire-Spencer has recharged the one shut down last week.

Although there is not a great deal of activity at present, a buying movement is believed to be under way. A general spirit of optimism pervades the area and an impetus to business is anticipated when car manufacturers begin to turn out their 1939 models.

Foundries are taking advantage of the lowered pig iron prices by placing large contracts for the third quarter but not for immediate delivery.

The new State highway for Tioga county, N. Y., will require 105 tons of reinforcing steel. Bethlehem Steel Co., Buffalo, was awarded the contract.

Bids are to be submitted July 28 to the U. S. Engineer's office, Binghamton, N. Y., for the U. S. Army dam to be constructed at Whitney Point, N. Y. This job will require 650 tons of reinforcing steel.

... CLEVELAND ...

... Recent changes believed to have checked downward price trend because of freight rate absorption ... Some consumers interested in protective contracts ... Pig iron buying improves.

CLEVELAND, July 12.—Ingot output this week shows gains of nine points in both districts, a comeback considerably better than expected. The rate for Youngstown and nearby cities at 30 per cent is the highest since April, while the Cleveland-Lorain district at 21 per cent is back to the pre-holiday level.

Another blast furnace for bessemer iron is about ready to go into production in the Valley. Other Ohio producers are contemplating stepping up the output of stacks which have been on reduced schedules for some time.

Pig iron orders have picked up noticeably. While buying of finished steel remains moderate, some consumers are beginning to realize, like iron purchasers, that the downward price trend appears to have been checked by the burden of increased freight absorptions which the mills must assume. A few users of flat rolled products have inquired about obtaining protective contracts for the remainder of this quarter.

The aggregate volume of incoming business so far this month is lower than in the comparable June period, but this is because of the holiday, the confusion which existed for a short period, and seasonal influences.

New angles accompanying the equalization of base prices keep arising daily. While waiting for developments to unfold fully, Ohio producers have come to the conclusion that changes may be gradual and that research and quality will play an even larger part in the picture from now on.

Governmental approval of the loan to the Southern Railway means that the Youngstown Steel Door Co., Youngstown, will be busy supplying doors for 3450 box cars.

Pig Iron

Numerous buyers who had been on the sidelines for months in this vicinity are now showing interest, due to the lowering of prices. It is expected production and shipments will reflect the improved tone before long. The \$4 per ton drop in iron prices has

increased the pressure on jobbing foundries from their customers for correspondingly reduced quotations on castings. On the whole, activity of foundries remains light.

Wire and Wire Products

The various markets remain for the most part seasonally inactive. In merchant wire products the official announcement of reductions had been expected for some time and demand has not stiffened to any marked extent. There is, however, a feeling among a large part of the trade that prices could hardly fall much lower and that the probable trend will be upward. Abolishment of differentials means additional absorption by numerous producers.

Sheets and Strip

The volume of incoming business so far this month is not far below the comparable June period. In view of the holiday and the confusion which existed for several days over prices, the showing is considered good. Possibilities and implications of the equalization of basing points are still being studied closely by consumers as well as producers. The new Detroit arbitrary price on cold strip will mean a lesser return for producers, the absorption being \$2.40 a ton.

Bolts, Nuts and Rivets

Following the price reductions on rods and bars, the leading producer here has lowered bolt and nut quotations 5 per cent to consumers. Thus machine and carriage bolts, $\frac{1}{2}$ in. by 6 in. and smaller, are now 65, 5 and 5 per cent off list. No new basing points have been reported. Now that the price situation has come to a head, ordering has been resumed and sellers expect continued improvement.

Bars, Shapes and Plates

While buyers of hot rolled and alloy bars have not been specifying heavily, orders are comparable to other recent weekly periods. Bids are about to be taken on improvements for a number of Great Lakes Coast

Guard stations, which will involve steel piling. This week's structural awards include several of 200 tons and under for Cleveland fabricators while the Clover Leaf intersection and Main Street bridge approaches top the list of pending business. Cleveland Railway Co. has awarded 200 tons of girder rails to Carnegie-Illinois.

Tubular Goods

It is understood the usual differential will apply on electric weld as against seamless. Moderate sales in all tubular products have been made at the lower price levels. Houston assumes added importance as a distribution center for oil country goods under the new mill-stock system of quoting there.

....ST. LOUIS....

... Granite City Steel Co. announces sheet prices \$2 a ton over Gary ... Pig iron sales heavy.

ST. LOUIS, July 12.—The Granite City Steel Co. has formally announced the following prices on its products f.o.b. Granite City: hot rolled sheets, 2.25c. per lb.; cold rolled sheets, 3.30c.; galvanized sheets, 24 gage base, 3.60c., and vitreous enameling stock, 20 gage base, 3.45c. The switching charge within the St. Louis industrial district is 3c. per 100 lb. for carloads. The new schedule was put into effect following the recent price differential abolition between Gary and Pittsburgh. The prices quoted are 10c. per 100 lb. over the Gary prices.

Buying of finished steel continues on a small scale, the abolition of the Chicago differential seemingly making no difference for the present at least. Consuming industries say that their order files and immediate prospects warrant no heavy buying.

Patterson Steel Corp., Tulsa, Okla., has been awarded 1584 tons of structural shapes for a highway bridge at Bixby, Okla.

A feeling that there might be an increase of \$1 to \$2 a ton in the price of pig iron, which was cut \$4 a ton, has had effect of continuing the heavy buying movement, and melters generally are covering for their third quarter requirements, and in some cases booking considerably more. Sales have ranged from a few carloads to as much as 10,000 tons, the latter being Northern iron.

..SAN FRANCISCO..

... Government work cushions downward trend in steel business.

SAN FRANCISCO, July 11.—Although some companies report a slight increase in small orders, the local steel market is still on the down grade, with Government construction providing the chief cushion to the

drop. A potential spurt, if general economic recovery appears likely, lies in several industrial projects in the tentative stage since the early spring. What may be an omen of better times is the award of the general contract for a Swift & Co. packing plant at Vernon, near Los Angeles. Bids were taken on this project at the beginning of the year, but it was shelved when business continued to decline.

The opening today of bids for a 6000-ton railroad bridge at Redding, Cal., provides the chief interest of the

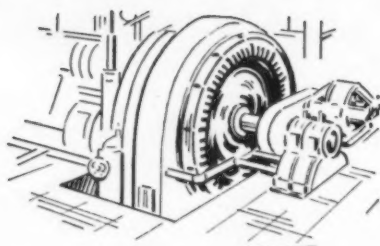
week. The structure was made necessary by relocation of Southern Pacific Railroad tracks around Shasta Dam.

Contract for the dam was awarded last week to Pacific Constructors, Inc., Los Angeles, which submitted a low bid of \$35,939,450 to the Bureau of Reclamation. Some engineers now believe that the contractor will need less steel in constructing the dam than originally estimated. One observer declares that because of the rough terrain of the dam site, a high-line rather than a trestle will be used in pouring concrete. The effectiveness of steel piling in constructing a cofferdam is also questioned under the building conditions.

Construction of a new water system at Redding, Cal., brought an order for 1900 tons of cast iron pipe to the United States Pipe & Foundry Co., San Francisco.

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..GREAT BRITAIN..

... Export buying slowly improving, Continent reports.

LONDON, July 12 (By Cable).—The Continent reports that export buying is improving slowly but so far no special feature or tonnage is in the market.

The British Federation policy in maintaining pig iron prices unchanged to the end of the year is leading to important developments. The Stanton Iron Works, largest foundry producer, has announced its intention of resigning from Producers' Association believing prices at least 20s. too high. Other works may follow. Pig iron business is still idle despite further output curtailment. Consumers are still taking only odd deliveries under months' old contracts and mostly imported.

Heavy steel outlook is brighter with consumers negotiating autumn deliveries. Light steel is still inactive; sheet works operating below 50 per cent.

Company to finance the proposed new steel works at Jarrow under Government aegis is now registered as New Jarrow Steel Works; capital £700,000. Consett Iron and Bank of England jointly interested.

The demand for tin plate is slightly improved with some buying for deliveries up to end of January, but no serious tonnages are yet involved. Unfilled orders are now over 2,250,000 base boxes.

Black and galvanized sheets are idle.

.. PHILADELPHIA ..

... Eastern Pennsylvania operations unaltered at 23 per cent ... Price confusion and business uncertainties continue to discourage steel buying ... Pig iron slightly more active ... New nail setup announced.

PHILADELPHIA, July 12.—Although all the excitement about prices and basing points has given an illusion of activity to the steel markets, it is none the less true that steel makers in this area have very skimpy order books. Even though price confusion is credited with discouraging bookings for the moment, there is evidence that steel consumers so far have not experienced enough pickup in business to justify alteration of their usual caution in ordering nothing more than fill-in carlots to cover nearby needs. The result is that rolling schedules in eastern Pennsylvania mills are still a hand-to-mouth proposition, hard pushed to support even minimum open-hearth activity. The steel making rate returned to 23 per cent of capacity after the holiday week there being little expectation of much improvement in July but every expectation that early August will witness the start of a fall movement upward.

Price action of the week here has included the establishment of a 2.45c. base at Pittsburgh for wire nails, with the provision that jobbers shall sign an agreement to secure allowances of a size depending on the actual amount of their business that is jobbed. If 50 per cent of the month's tonnage is jobbed, an allowance of 10c. a keg will result; if 75 per cent, the allowance will be 15c. a keg; and if 100 per cent—which is very unusual—the allowance will be 20c. a keg.

Other price action has been a drop in the quotation on welded mechanical tubing, and a ¼c. per ft. reduction in small size seamless tubing, ⅝ in., ¾ in., and ⅜ in., standard and extra strong, black and galvanized, plain ends, threaded or coupled ends.

The fall period is steadily looking more attractive for makers of ship plate as additional shipbuilding business continues to come into this district. The Atlantic Refining Co. has awarded to Sun Shipbuilding Co. a tanker which involves 4000 tons of plates, shapes and bars. Furthermore, the Navy Department has opened bids

on three submarines, on which Electric Boat Co. was the only bidder; on four destroyers, Bath Iron Works and Federal Shipbuilding Co. were low on two each; Bethlehem's regular bid on the destroyers was higher, but that company entered a low bid based on furnishing destroyers of previous design, although consideration of such design is unlikely; on three fleet tugs Bethlehem (Staten Island yard) was low bidder, higher tenders being entered by Pusey & Jones and New York Shipbuilding Co.

... BOSTON ...

... Pig iron buying gains slightly ... Steel warehouse prices lowered.

BOSTON, July 12.—Pig iron sales the past week approximated 1500 tons for prompt and third quarter business, the best week noted in some time. However, buying has not been based on any appreciable increase in foundry activities, but rather on the part of some to a belief that prices may be higher before the end of the third quarter, and on the part of others to improved sentiment based on a better business outlook. Deliveries by stove makers continue to be disappointing, and most of the improvement in New England industry centers in textile and shoe lines. Unemployment has not been relieved sufficiently or public buying power increased sufficiently to warrant manufacturers placing casting orders with foundries in increased amounts. Electric appliance manufacturers are doing about half as much business as a year ago.

New Local warehouse prices have been issued. Basing point on structurals, bar shapes, bars, tire steel, half rounds, etc., is Buffalo; on hot rolled strip steel and diamond pattern floor plates, Pittsburgh; on sheared and universal mild steel plates, Claymont or Coatesville; and on hot rolled steel sheets, Sparrows Point. Quantity differentials have been reduced.

Like plate makers, the suppliers of constructional steel will probably have to wait until fall for much enhancement in business. At the moment bookings are scarce, with Belmont Iron Works taking the week's only tonnage—175 tons—for a Horn & Hardart retail store. Pencker Construction Co., Cincinnati, is low bidder on the Pennsylvania Avenue bridge, Washington, but no disposition of the 4500 tons of shapes and 960 tons of bars has yet been made.

Pig Iron

With a \$4 a ton reduction in pig iron, foundries have more incentive to buy, and in fact there is a definite tendency to switch from a minimum carload of 25 tons to shipments of 50 tons or in some cases here to as much as 500 tons. The pig iron reduction has not been an unmixed blessing to the foundries, however, as their customers are in turn asking for stiff price reductions on castings.

CANADA

... Further large airplane and munitions contracts expected from Britain.

TORONTO, July 11.—News reports from Ottawa and London indicate that further large contracts will be forthcoming for airplanes and munitions. It is announced that Great Britain plans expenditure of approximately a billion dollars on its air force and is contemplating an airplane plant and training fields in Canada.

Domestic demand for iron and steel products is increasing steadily and with excellent crop prospects for western Canada demand for agricultural implements is gaining and a big market is expected. Structural steel business is improving and a number of orders ranging up to 500 tons have been closed recently while others totaling some 5000 tons are pending. Warehouse operators report good demand for sheets and bars, although there has been minor slowing down owing to summer holiday season.

In the pig iron markets some additional booking for third quarter delivery was reported for the week, but local blast furnace representatives do not look for much further business in this respect.

Trading in iron and steel scrap continues spotty with fair demand reported for heavy melting steel, and odd lot sales made in turnings.

...NEW YORK...

... Moderate increase in steel sales reported by a few mills ... Consumers still studying new competitive situation ... Pig iron orders gain.

NEW YORK, July 12.—A few steel sellers in this district have had a moderate increase in business during the past week, but the majority of consumers are still studying the basing point changes with respect to the new competitive situation in which many of them find themselves.

While inventories of steel in consumers' hands are generally low, there is no incentive for immediate replenishment. Few consumers are experiencing a sufficient increase in their own orders to expand their steel purchases. Eventually there may be some speculative buying, as has occurred in pig iron in several districts, on the theory that steel prices are likely to strengthen later in the year.

About 70,000 tons of steel required for the building of 5550 cars for the Southern Railway has been released to the mills following the approval of a Government loan to the railroad. Much of this steel will be rolled during the next several weeks.

A reduction of \$2 each on high-duty carwheels has been announced by a leading maker.

The New York Central will take new bids on its third quarter steel requirements, former bids having been thrown out owing to the change in prices and basing points. No date has been announced for the receipt of the new bids.

Pig Iron

A fair volume of third quarter business has been placed in the past week, lending encouragement to local sellers. Material on old contracts will be delivered on the new price basis from now on. Foundry stocks are not high. The general feeling in the trade is that the recent price cut was too drastic and an adjustment of \$1 upward is not unlikely in the near future.

The City of New York opened bids on July 6 on 8000 tons of cast iron pipe for the Department of Water Supply. An additional tonnage of valves, hydrants and fittings is involved.

Plates and Sheets

Plate sales are still dragging on bottom, with no signs of a pick-up in the near future. A few consumers have asked to be quoted on their requirements to the end of the year, but sellers have declined to quote beyond the quarter. The Department of Sanitation scow job, involving 9000 tons of plates, has yet to be awarded.

A number of sheet sellers report an improvement in order volume in the past week, one of them having had the best week in many months, but this condition does not hold for the group as a whole. A lot of 300 tons of sheets would have been placed a month ago at prevailing prices had the specifications then been ready.

...CINCINNATI...

... Rolling mill operations have improved slightly ... sheet bookings gain.

CINCINNATI, July 12.—Although mill interests are sensitive to any effects of recent steel price changes, they report no discernible change in current business. A slight increase in sheet bookings the past week was believed to be a normal development, regardless of prices, since the rate was about the same as the uptrend in previous weeks. This improvement was noted largely by the leading district interest, although reports from other mills ranged from no change to a slight increase.

The Newport Rolling Mill Co. is accommodating its quotations to the change and has accepted the Middletown base on hot and cold rolled and galvanized sheets, enameling sheets and hot rolled strip. Consumer reaction is still reported to be one of confusion as to the entire set-up.

Production of district mills will be up a few points this week to about 38 per cent of capacity. This new schedule is arranged to accommodate the increase in ordering and consumer demand for rush shipments.

Price reductions on pig iron have stimulated moderate anticipatory con-

tracting in this area. While large melters are still reported in the market for only current needs, smaller users have sought cover to assure material at their present rate of consumption through the third quarter. Quantities are not disclosed, but furnace interests indicate they are not large. Rumors from other areas that furnaces anticipate upward revisions to \$2 a ton in Eastern districts have tended to stimulate further consumer interest with some representatives here doubtful as to whether the price cut or these rumors are responsible for the improved contracting. The melt has not changed appreciably, the past week, although increased releases for this week may be harbingers of a heavier foundry operation.

Open hearth operations are off a few points, this week. One interest has cooled all its furnaces, while another has increased from five to six open hearths in operation. The active total is 12 out of 34.

...PIPE LINES...

South Short Utilities Associates, Inc., care of F. L. Putnam & Co., Inc., 159 Devonshire Street, Boston, investment securities, has let contract to Stone & Webster Engineering Corp., Boston, for new 2 to 8-in. welded steel pipe lines for high-pressure gas transmission in South Shore district, including Barnstable, Bourne, Falmouth, Yarmouth and Chatham, Mass., with distributing lines in these municipalities, about 85 miles in all. Project will include three steel gas holders, with operating facilities.

Tacoma, Wash., plans steel pipe lines for main water supply in connection with expansion and improvements in system, including new cast iron distributing mains. Cost \$1,566,000, of which \$704,700 has been secured by Federal grant. W. A. Kunigk is city water superintendent.

Oxford, Kan., has asked bids for pipe lines for municipal gas distribution system. Cost about \$35,000. A bond issue has been approved. F. E. Devlin, W-K-H Building, Wichita, Kan., is consulting engineer.

Natural Gas Corp. of Tennessee, Inc., care of John E. Edgerton, Lebanon, Tenn., president, is planning new welded steel pipe line from gas field near Shreveport, La., to Chattanooga, Tenn., for natural gas transmission for distribution at latter place, where negotiations are under way for furnishing service. Company also will build branch lines for natural gas supply to other municipalities in that part of State.

Water Department, Toledo, Ohio, has secured Federal grant of \$3,693,234 for part of total fund of \$8,200,000 required for proposed steel pipe lines for main water system from source to be developed on Lake Erie, with waterworks stations and distribution lines in city. Required additional financing will be carried out soon. George N. Schoonmaker is director of public service. J. N. Ely is city manager.

Townsend, Mont., has low bid from Montana Culvert & Pipe Co., Missoula, Mont., for 15,000 lin. ft. of 10-in. steel pipe for water system at 98c. per lin. ft. O. A. Baarson, Helena, Mont., is consulting engineer.

A. O. Smith Corp., Milwaukee, has received order from a California oil producer, name withheld, for 17 miles of 8 $\frac{1}{4}$ -in. welded steel pipe.

...NON-FERROUS...

... Metal markets quiet down following active speculative period . . . Copper quiet at 9.75c. a lb. . . . Zinc sales for week total 1145 tons . . . August lead still in demand . . . Tin dull at lower prices.

NEW YORK, July 12.—Unable to keep up the fast pace set earlier in the month, the domestic copper market has quieted down until sellers are engaged primarily in handling shipments on existing contracts. Consumers of the red metal are very well covered for anticipated needs up through September and into October, and unless business conditions in general improve quickly it seems unlikely that much

new activity will develop for some time to come. Prices are unaltered and firm at 9.75c. a lb., for electrolytic metal delivered Connecticut Valley. Following the decrease in speculative fever here, interest from abroad has likewise fallen off. The foreign price is off to 9.57c., with very little metal changing hands at this figure. In view of the heavy domestic sales on producers' books, the trade is awaiting with interest the forthcoming

ing statistics. Estimates are that surplus stocks will show no great change, at least not change enough to introduce new buying motives.

Zinc

Prime Western sales for the week totaled 1145 tons, with undelivered contracts about normal at 40,164 tons, and shipments aggregating 2569 tons. With the market recovering from an earlier speculative flurry, it is only natural that inactivity is the ruling factor today. None the less, prices are quite firm on the basis of 4.75c. a lb., East St. Louis, with metal available at this figure up through October. While zinc consumers are well taken care of for immediate needs, a steady pick-up in steel activity would necessarily force considerable new business into the market. June sales of zinc amounted to 30,629 tons, which was four times the quantity sold in May and by far the largest quantity sold since the very heavy buying movement of last August.

Lead

Prices are unchanged and firm at 4.90c. a lb., New York. Even though buying activity has slackened considerably, sales on the whole pretty well balanced intakes. Consumers have generally covered their July requirements, and the August total is probably about one-half purchased. It is thus reasonable to assume the maintenance of fair activity. Present estimates are that July shipments will be in the neighborhood of 40,000 tons, with the probability that turnover will improve as the year progresses. Lead production in the United States during May totaled 31,918 tons, against 37,997 tons in April.

Tin

The market was enlivened last Wednesday when the Navy Department came in to purchase 100 short tons of metal, but since that time listlessness has prevailed, with consumers apparently completely uninterested in building up supplies no matter what the price may be. Whereas Straits metal in New York eased off price-wise during the week in sympathy with a less active stock market, the price rebounded to 42.875c. a lb., New York, this afternoon, also in sympathy with a flurry in stock transactions. The price in London has gradually eased off, prompt metal on first call this morning appearing at £189, three-months metal at £190, and Straits at Singapore quoted at £190 2s. 6d.

The Week's Prices. Cents Per Pound for Early Delivery

	July 7	July 8	July 9	July 11	July 12
Electrolytic copper, Conn.	9.75	9.75	9.75	9.75	9.75
Lake copper, N. Y.	9.875	9.875	9.875	9.875	9.875
Straits tin, spot, New York	43.65	42.60	42.75	42.75	42.875
Zinc, East St. Louis	4.75	4.75	4.75	4.75	4.75
Zinc, New York	5.14	5.14	5.14	5.14	5.14
Lead St. Louis	4.75	4.75	4.75	4.75	4.75
Lead, New York	4.90	4.90	4.90	4.90	4.90

*Delivered Connecticut Valley; price $\frac{1}{4}$ c. lower delivered in New York.
Aluminum, virgin, 99 per cent plus 20.00c.-21.00c. a lb., delivered.
Aluminum No. 12 remelt No. 2 standard, in carloads, 19.00c. to 19.50c. a lb., delivered.
Nickel, electrolytic, 35c. to 36c. a lb. base refinery, in lots of 2 tons or more.
Antimony, Asiatic, 14.00c. a lb., prompt, f.o.b., New York.
Antimony, American, 11.25c. per lb., prompt shipment, New York.
Quicksilver, \$82.00 per flask of 76 lb.
Brass ingots, commercial 85-5-5-5, 10.25c. a lb., less carload, delivered in Middle West
 $\frac{1}{4}$ c. a lb. is added on orders for less than 40,000 lb.

From New York Warehouse

Delivered Prices, Base per Lb.

Tin, Straits pig	45.00c. to 46.00c.
Tin, bar	47.00c. to 48.00c.
Copper, Lake	10.50c. to 11.50c.
Copper, electrolytic	10.50c. to 11.50c.
Copper, castings	10.00c. to 10.25c.
*Copper sheets, hot-rolled	17.625c.
*High brass sheets	16.125c.
*Seamless brass tubes	18.875c.
*Seamless copper tubes	18.125c.
*Brass rods	12.125c.
Zinc, slabs	6.00c. to 7.00c.
Zinc, sheets (No. 9), casks, 1200 lb. and over	10.50c.
Lead, American pig	5.50c. to 6.50c.
Lead, bar	6.25c. to 6.625c.
Lead, sheets, cut	7.75c.
Antimony, Asiatic	15.25c. to 16.25c.
Alum., virgin, 99 per cent plus	22.50c. to 24.00c.
Alum., No. 1 for remelting, 98 to 99 per cent	19.50c. to 21.00c.
Solder, $\frac{1}{2}$ and $\frac{1}{4}$	29.00c. to 30.00c.
Babbitt metal, commercial grade	20.00c. to 50.00c.

*These prices, which are also for delivery from Chicago and Cleveland warehouses, are quoted with 25 per cent allowed off for extras, except copper sheets and brass rods, on which allowance is 40 per cent.

From Cleveland Warehouse

Delivered Prices per Lb.

Tin, Straits, pig	46.75c.
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Tin, bar	48.75c.
Copper, Lake	10.75c. to 11.00c.
Copper, electrolytic	10.75c. to 11.00c.
Copper, castings	10.50c.
Zinc, slabs	7.50c. to 7.75c.
Lead, American pig	5.40c. to 5.65c.
Lead, bar	8.50c.
Antimony, Asiatic	17.75c. to 18.00c.
Babbitt metal, medium grade	21.25c.
Babbitt metal, high grade	50.75c.
Solder, $\frac{1}{2}$ and $\frac{1}{4}$	28.25c.

Old Metals Per Lb., New York

Buying prices are paid by dealers for miscellaneous lots from smaller accumulators and selling prices are those charged to consumers after the metal has been prepared for their uses. (All prices are nominal.)

	Dealers' Buying Prices	Dealers' Selling Prices
Copper, hvy. crucible	7.25c.	8.00c.
Copper, hvy. and wire	6.375c.	6.875c.
Copper, light and bottoms	5.875c.	6.125c.
Brass, heavy	3.875c.	4.375c.
Brass, light	2.875c.	3.625c.
Hvy. machine composition	5.750c.	7.25c.
No. 1 yel. brass turnings	8.625c.	4.625c.
No. 1 red brass or compos. turnings	5.375c.	4.625c.
Lead, heavy	3.50c.	3.875c.
Cast aluminum	5.50c.	6.75c.
Sheet aluminum	9.75c.	11.25c.
Zinc	2.125c.	3.375c.

IRON AND STEEL SCRAP

... Market continues to rise as dealers hold back on material in yards ... Composite up 50c. to \$13.08.

JULY 12.—With brokers paying \$12 to cover an \$11.75 sale of No.

1 steel to a Chicago mill, the market is stronger there and the whole list is up 50c. A moderate tonnage sale at \$14.50 at Pittsburgh, \$1 above the price prevailing a week ago, has hiked most other steel making grades 50c. to \$1, although sentiment there is not as bullish as it has been. The market undertone at Philadelphia is still strong, but No. 1 steel remains at \$13.50 top. These changes result in an increase in the composite price from \$12.58 last week to \$13.08, up 50c., and equal to the average prevailing in mid-April. The composite has now recovered more than two-thirds the ground lost between January and middle June, when prices were \$14 and \$11 respectively.

In most centers, dealers are showing hesitation in parting with material, giving strength to the market even in districts like Buffalo where no mill sales are currently reported. In no market is material coming out freely. Export buying prices are much stronger at Boston.

Pittsburgh

The market continues to exhibit a strong undertone, but sentiment is not as bullish as a week ago. A small tonnage of No. 1 steel was sold into consumption last week at \$14 a ton, but within the past day a moderate sized tonnage has been bought at \$14.50 a ton. The market is quotable this week on No. 1 at \$14 to \$14.50, an increase of \$1 a ton from last week's quotation. A contributing factor in the current strength was the sale last week by a large producer of 5000 tons of "Special" heavy melting steel to a broker at \$15 a ton f.o.b. Pittsburgh for delivery down river, the consumer to pay transportation charges. This particular scrap is considered equivalent to railroad heavy melting.

Chicago

Another 50c. a ton increase in scrap prices here is the result of a mill sale at \$11.75 and brokers bids of \$12, heavy melting being listed at \$11.50 to \$12. Brokers are not willing to sell for less than \$12 and in some cases it is doubtful if even this price would be sufficient to bring out much material.

Philadelphia

Even though prices on No. 1 and No. 2 heavy melting steel remain unaltered from last week, the market undertone for

these grades is still very strong. It is a foregone conclusion that prices will display further strengthening in the near future if operations respond to even a small degree. Certain cast grades and three railroad specialties have advanced 50c. on the basis of recent small purchases. Spotty deliveries of heavy melting steel are going into practically every district plant on old orders, and dealers are showing extreme reluctance to liberate much tonnage, even if they have a fair stock pile. An Italian export boat is due here on Monday to take on 4000 tons of No. 1 on an old order. Inquiry on the part of certain brokers for tonnage to cover recent export orders has brought forth such high prices here as to discourage much buying.

Cleveland

Heavy melting steel at Youngstown is nominally up 50c. to \$13 to \$13.50 per ton this week. Brokers have encountered scarcity of good material and hesitation on the part of yard dealers. The temporary suspension of shipments by one leading producer in the Valley has helped a little for those dealers trying to cover the 20,000-ton order placed several weeks ago. The Cleveland market still lacks activity. The New York Central declined to part with its steel this month.

Buffalo

Despite the fact that no sales have been reported, the scrap market has a strong tone and dealers expect sizable transactions in the near future. Buyers have increased their bids, but dealers are refusing to sell in hopes that the trend will continue upward. Greater activity is anticipated shortly as inquiries from consumers, including several foundries, are appearing in greater number. The new price range places No. 1 heavy melting steel at \$12 to \$12.50 a ton, up \$1, with the customary differential prevailing in No. 2 material, drop forge flashings, busheling and compressed sheets.

St. Louis

The scrap iron market continued strong, with several items 25c. to \$1 higher. It is still a dealers' market, and they report having difficulty in getting sufficient material to cover their short interest, which is said to be heavy. There is some demand for malleable items, but mills generally are out of the market. Railroad lists: Missouri-Pacific, 55 carloads; Kansas City-Southern, 600 tons.

Cincinnati

Dealer activity continues to support the district scrap market. Bidding for material has brought dealers quotations upward 25c., but mills are not disposed to buy material generally. While there is a fair amount of scrap available, current quotations are not bringing it out as freely as dealers expect.

Detroit

With all the automotive scrap lists out of the way for a few weeks, the Detroit scrap market settled into a period of summer quietness with activity almost nil. Actually there was probably only 1000 to 2000 tons of scrap moved during the week. Sales that were reported were of a minor character but in the main supported prices.

Boston

Prices for scrap in general are higher, especially those for heavy melting steel for export, very largely due to the fact that comparatively little steel is coming into the market and the fact that brokers have been obtaining a little more business for domestic delivery, particularly in steel turnings, bundled skeleton and breakable cast. No. 1 heavy melting steel for export is now generally \$11 a ton delivered dock, contrasted with \$9.50 10 days or so ago. Recently a round tonnage left here for Germany, but most business is earmarked for southern Europe.

New York

Buying prices for export remain unchanged over the previous week, and brokers involved seem satisfied with the present flow. One vessel left New York on Monday a few hours after another arrived and two others are starting loading at nearby Atlantic ports. The last order is being covered at considerable loss, but those involved are taking a philosophic attitude, hoping to make up for it on the next European order and on the anticipated increase in domestic business. Car prices are firm, and there have been a few upward adjustments in line with the movement of the Philadelphia market. No. 1 steel remains at a \$10 top.

REINFORCING STEEL

... Awards of 15,930 tons; 14,505 tons in new projects.

AWARDS

15,000 Tons, New York, housing project in Bronx of Metropolitan Life Insurance Co., to Bethlehem Steel Co., Bethlehem, Pa., through Starrett Bros. & Eken, N. Y., contractors.

700 Tons, Lever Brothers office building, to Concrete Steel Co., Boston; Stone & Webster Engineering Corp., contractor.

125 Tons, Chicago, Valentine Boys' Club, to Ceco Steel Products Co., Omaha, Neb.

105 Tons, Tioga County, N. Y., State highway, to Bethlehem Steel Co., Buffalo.

NEW REINFORCING BAR PROJECTS

13,550 Tons, Kennett, Cal., Shasta Dam; bids before Aug. 15 by Bureau of Reclamation.

440 Tons, Dixon, Ill., bridge; bids in.

650 Tons, Whitney Point, N. Y., Army dam; bids to be submitted to United States Engineer's office, Binghamton, N. Y., July 28.

204 Tons, Colfax, Cal., overpass; bids July 27.

100 Tons, Longvale, Cal., bridge over Eel River; bids July 29.

Iron and Steel Scrap Prices

PITTSBURGH

Per gross ton delivered to consumer:	
No. 1 hvy. mltng. steel	\$14.00 to \$14.50
Railroad hvy. mltng.	14.50 to 15.00
No. 2 hvy. mltng. steel	12.50 to 13.00
Scrap rails	15.00 to 15.50
Rails 3 ft. and under	16.00 to 16.50
Comp. steel	14.00 to 14.50
Hand bundled sheets	13.00 to 13.50
Hvy. steel axle turn.	12.50 to 13.00
Machine shop turn.	8.50 to 9.00
Short shov. turn.	8.50 to 9.00
Mixed bor. & turn.	6.50 to 7.00
Cast iron borings	6.50 to 7.00
Hvy. breakable cast.	13.50 to 14.00
No. 1 cupola cast.	14.50 to 15.00
RR. knuckles & cplrs.	16.00 to 16.50
Rail coil & leaf springs	16.00 to 16.50
Roller steel wheels	16.00 to 16.50
Low phos. billet crops	16.50 to 17.00
Low phos. punchings	15.00 to 15.50
Low phos. plate	14.00 to 15.00

PHILADELPHIA

Per gross ton delivered to consumer:	
No. 1 hvy. mltng. steel	\$13.00 to \$13.50
No. 2 hvy. mltng. steel	11.50 to 12.00
Hydraulic bund., new	13.00 to 13.50
Hydraulic bund., old	10.00 to 10.50
Steel rails for rolling	17.00 to 17.50
Cast iron carwheels	14.50 to 15.00
Hvy. breakable cast.	14.00 to 14.50
No. 1 cast	15.50 to 16.00
Stove plate (steel wks.)	12.00 to 12.50
Railroad malleable	15.00 to 15.50
Machine shop turn.	7.00 to 7.50
No. 1 blast furnace	6.00 to 6.50
Cast borings	6.00 to 6.50
Heavy axle turnings	10.00 to 10.50
No. 1 low phos. hvy.	16.00 to 16.50
Couplers & knuckles	15.50 to 16.00
Roller steel wheels	15.50 to 16.00
Steel axles	20.00 to 20.50
Shafting	19.00 to 19.50
No. 1 RR. wrought	15.00 to 15.50
Spec. iron & steel pipe	12.00 to 12.50
No. 1 forge fire	10.50 to 11.00
Cast borings (chem.)	9.50 to 10.00

CHICAGO

Delivered to Chicago district consumers:	
Per Gross Ton	
Hvy. mltng. steel	\$11.50 to \$12.00
Auto. hvy. mltng. steel alloy free	10.00 to 10.50
No. 2 auto. steel	9.50 to 10.00
Shoveling steel	11.50 to 12.00
Hydraul. comp. sheets	10.00 to 10.50
Drop forge flashings	9.25 to 9.75
No. 1 busheling	10.00 to 10.50
No. 2 busheling, old	4.25 to 4.75
Roller carwheels	14.50 to 15.00
Railroad tires, cut	15.00 to 15.50
Railroad leaf springs	14.50 to 15.00
Steel coup. & knuckles	13.50 to 14.00
Axle turnings	10.50 to 11.00
Coil springs	15.00 to 15.50
Axle turn. (elec.)	10.50 to 11.00
Low phos. punchings	14.00 to 14.50
Low phos. plates, 12 in. and under	13.00 to 13.50
Cast iron borings	4.50 to 5.00
Short shov. turn.	6.00 to 6.50
Machine shop turn.	4.50 to 5.00
Re-rolling rails	14.25 to 14.75
Steel rails under 3 ft.	14.50 to 15.00
Steel rails under 2 ft.	15.00 to 15.50
Angle bars, steel	13.00 to 13.50
Cast iron carwheels	13.25 to 13.75
Railroad malleable	12.25 to 12.75
Agric. malleable	10.50 to 11.00

Per Net Ton	
Iron car axles	17.00 to 17.50
Steel car axles	15.50 to 16.00
No. 1 RR. wrought	9.50 to 10.00
No. 2 RR. wrought	9.75 to 10.25
Locomotive tires	14.75 to 15.25
Pipes and flues	8.25 to 8.75
No. 1 machinery cast.	11.50 to 12.00
Clean auto. cast.	10.00 to 10.50
No. 1 railroad cast.	10.25 to 10.75
No. 1 agric. cast.	10.00 to 10.50
Stove plate	8.00 to 8.50
Grate bars	8.50 to 9.00
Brake shoes	8.00 to 8.50

YOUNGSTOWN

Per gross ton delivered to consumer:	
No. 1 hvy. mltng. steel	\$13.00 to \$13.50
Hydraulic bundles	12.50 to 13.00
Machine shop turn.	8.50 to 9.00

CLEVELAND

Per gross ton delivered to consumer:	
No. 1 hvy. mltng. steel	\$11.50 to \$12.00
No. 2 hvy. mltng. steel	10.50 to 11.00
Comp. sheet steel	10.75 to 11.25
Light bund. stampings	8.00 to 8.50
Drop forge flashings	9.50 to 10.00
Machine shop turn.	5.50 to 6.00
Short shov. turn.	6.25 to 6.75
No. 1 busheling	10.00 to 10.50
Steel axle turnings	9.50 to 10.00
Low phos. billet and bloom crops	17.00 to 17.50
Cast iron borings	5.50 to 6.00
Mixed bor. & turn.	5.50 to 6.00
No. 2 busheling	5.50 to 6.00
No. 1 cast	13.50 to 14.00
Railroad grate bars	8.50 to 9.00
Stove plate	8.00 to 8.50
Rails under 3 ft.	16.50 to 17.00
Rails for rolling	14.00 to 15.00
Railroad malleable	13.50 to 14.00
Cast iron carwheels	14.00 to 14.50

BUFFALO

No. 1 hvy. mltng. steel	\$12.00 to \$12.50
No. 2 hvy. mltng. steel	10.50 to 11.00
Scrap rails	13.50 to 14.00
New hvy. b'ndled sheets	10.00 to 10.50
Old hydraul. bundles	8.50 to 9.00
Drop forge flashings	10.50 to 11.00
No. 1 busheling	10.50 to 11.00
Hvy. axle turnings	10.00 to 10.50
Machine shop turn.	6.00 to 6.50
Knuckles & couplers	16.50 to 17.00
Coil & leaf springs	16.50 to 17.00
Roller steel wheels	16.00 to 16.50
Low phos. billet crops	15.50 to 16.00
Shov. turnings	6.50 to 7.00
Mixed bor. & turn.	6.00 to 6.50
Cast iron borings	6.00 to 6.50
Steel car axles	16.00 to 16.50
No. 1 machinery cast.	14.00 to 14.50
No. 1 cupola cast.	13.50 to 14.00
Stove plate	12.00 to 12.50
Steel rails under 3 ft.	16.00 to 16.50
Cast iron carwheels	13.50 to 14.00
Railroad malleable	12.50 to 13.00
Chemical borings	8.50 to 9.00

ST. LOUIS

Dealers' buying prices per gross ton delivered to consumer:	
Selected hvy. melting	\$11.00 to \$11.50
No. 1 hvy. melting	11.00 to 11.50
No. 2 hvy. melting	10.50 to 11.00
No. 1 locomotive tires	12.00 to 12.50
Misc. stand. sec. rails	11.00 to 11.50
Railroad springs	12.50 to 13.00
Bundled sheets	5.50 to 6.00
No. 1 busheling	5.50 to 6.00
Cast bor. & turn.	1.50 to 2.00
Machine shop turn.	1.50 to 2.00
Heavy turnings	7.00 to 7.50
Rails for rolling	13.50 to 14.00
Steel car axles	15.50 to 16.00
Iron car axles	19.50 to 20.00
No. 1 RR. wrought	7.50 to 8.00
No. 2 RR. wrought	11.00 to 11.50
Steel rails under 3 ft.	13.00 to 13.50
Steel angle bars	10.50 to 11.00
Cast iron carwheels	11.50 to 12.00
No. 1 machinery cast.	11.00 to 11.50
Railroad malleable	11.00 to 11.50
No. 1 railroad cast	10.50 to 11.00
Stove plate	8.00 to 8.50
Grate bars	8.50 to 9.00
Brake shoes	8.50 to 9.00

CINCINNATI

Dealers' buying prices per gross ton at yards:	
No. 1 hvy. mltng. steel	\$9.75 to \$10.25
No. 2 hvy. mltng. steel	7.75 to 8.25
Scrap rails for mltng.	14.50 to 15.00
Loose sheet clippings	5.25 to 5.75
Hydrau. b'ndled sheets	9.25 to 9.75
Cast iron borings	2.75 to 3.25
Machine shop turn.	3.25 to 3.50
No. 1 busheling	7.50 to 8.00
No. 2 busheling	2.25 to 2.75
Rails for rolling	16.50 to 17.00
No. 1 locomotive tires	13.25 to 13.75
Short rails	17.00 to 17.50
Cast iron carwheels	11.50 to 12.00
No. 1 machinery cast.	11.50 to 12.00
No. 1 railroad cast.	10.00 to 10.50
Burnt cast	6.50 to 7.00
Stove plate	6.50 to 7.00
Agricul. malleable	11.00 to 11.50
Railroad malleable	13.00 to 13.50
Mixed hvy. cast.	8.25 to 8.75

BIRMINGHAM

Per gross ton delivered to consumer:	
Hvy. melting steel	\$12.00 to \$12.50
Scrap steel rails	14.00 to 14.50
Short shov. turnings	7.50 to 8.10
Stove plate	9.00 to 10.00
Steel axles	15.00 to 16.00
Iron axles	15.00 to 16.00
No. 1 RR. wrought	10.00
Rails for rolling	15.00 to 16.00
No. 1 cast	14.50 to 15.00
Tramcar wheels	14.50

DETROIT

Dealers' buying prices per gross ton:	
No. 1 hvy. mltng. steel	\$10.00 to \$10.50
No. 2 hvy. mltng. steel	8.50 to 9.00
Borings and turnings	5.50 to 6.00
Long turnings	6.00 to 6.50
Short shov. turnings	7.50 to 8.00
No. 1 machinery cast.	11.50 to 12.00
Automotive cast	11.50 to 12.00
Hvy. breakable cast.	9.00 to 9.50
Hydraul. comp. sheets	10.50 to 11.00
Stove plate	6.75 to 7.25
New factory bushel.	10.00 to 10.50
Old No. 2 busheling	2.50 to 3.00
Sheet clippings	7.50 to 8.00
Flashings	8.00 to 8.50
Low phos. plate scrap	11.00 to 11.50

NEW YORK

Dealers' buying prices per gross ton on cars:	
No. 1 hvy. mltng. steel	\$9.75 to \$10.00
No. 2 hvy. mltng. steel	8.00 to 8.50
Hvy. breakable cast.	10.00 to 10.50
No. 1 machinery cast.	11.00 to 11.50
No. 2 cast	9.00 to 9.50
Stove plate	8.00 to 8.25
Steel car axles	20.00 to 20.50
Shafting	15.00 to 15.50
No. 1 RR. wrought	11.00 to 11.50
No. 1 wrought long	9.50 to 10.00
Spec. iron & steel pipe	8.50 to 9.00
Rails for rolling	16.00 to 16.50
Clean steel turnings*	3.00 to 3.50
Cast borings*	3.00 to 3.50
No. 1 blast furnace	3.00 to 3.50
Cast borings (chem.)	9.50 to 10.00
Unprepared yard scrap	4.50 to 5.00
Light iron	3.00 to 3.50
Per gross ton, delivered local foundries:	
No. 1 machn. cast	\$13.00 to \$14.00
No. 2 cast	10.50 to 11.00

*\$1.50 less for truck loads.

BOSTON

Dealers' buying prices per gross ton:	
No. 1 hvy. mltng. steel	\$12.50 to \$13.00
Scrap rails	12.50 to 13.00
No. 2 steel	11.50 to 12.00
Breakable cast	8.75 to 9.00
Machine shop turn.	2.35
Mixed bor. & turn.	2.25
Bun. skeleton long	5.50 to 5.75
Shafting	13.50 to 14.00
Cast bor. chemical	5.50
Per gross ton delivered consumers' yards:	
Textile cast	\$12.00 to \$12.50
No. 1 machine cast	12.00 to 12.50

PACIFIC COAST

Per gross ton delivered to consumer:	
No. 1 hvy. mltng. steel	\$11.65 to \$12.15
No. 2 hvy. mltng. steel	10.65 to 11.15

CANADA

Dealers' buying prices at their yards, per gross ton:	
Toronto Montreal	
No. 1 hvy. mltng. steel	\$10.50 \$9.50
No. 2 hvy. mltng. steel	9.50 8.50
Mixed dealers steel	8.50 7.50
Scrap pipe	8.50 7.50
Steel turnings	7.50 7.00
Cast borings	8.50 7.50
Machinery cast	15.00 14.00
Dealers cast	13.00 12.00
Stove plate	11.00 10.50

EXPORT

Dealers' buying prices per gross ton:	
New York, truck lots, delivered, barges	
No. 1 hvy. mltng. steel	\$10.50 to \$10.75
No. 2 hvy. mltng. steel	9.00 to 9.50
No. 2 cast	9.00
Stove plate	8.00
Boston on cars at Army Base or Mystic Wharf	
No. 1 hvy. mltng. steel	\$11.00
No. 2 hvy. mltng. steel	10.00
Rails (scrap)	11.00
Philadelphia, delivered alongside boats, Port Richmond	
No. 1 hvy. mltng. steel	Nominal
No. 2 hvy. mltng. steel	Nominal

PRICES ON FINISHED AND SEMI-FINISHED IRON AND STEEL

SEMI-FINISHED STEEL

Billets, Blooms and Slabs

Pittsburgh, Chicago, Cleveland, Youngstown, Buffalo, Birmingham, Sparrows Point (Re-rolling only). Prices delivered Detroit are \$2 higher.

Per Gross Ton

Rerolling\$34.00
Forging quality 40.00

Sheet Bars

Pittsburgh, Chicago, Cleveland, Youngstown, Buffalo, Canton, Sparrows Point, Md.

Per Gross Ton

Open-hearth or besse-mer\$34.00

Skelp

Pittsburgh, Chicago, Youngstown, Buffalo, Coatesville, Pa., Sparrows Point, Md.

Per Lb.

Grooved, universal and sheared1.90c.

Wire Rods

(No. 5 to 9/32 in.)

Per Gross Ton

Pittsburgh, Chicago or Cleve-land\$43.00
Worcester, Mass. 45.00
Birmingham 43.00
San Francisco 52.00
Rods over 9/32 in. or 47/64 in., in-clusive, \$5 a ton over base.

SOFT STEEL BARS

Base per Lb.

Pittsburgh, Chicago, Cleveland, Buffalo and Birmingham... 2.25c.
Detroit, delivered 2.35c.
Philadelphia 2.57c.
New York 2.66c.
On cars dock Tex. Gulf ports.. 2.60c.
On cars dock Pacific ports ... 2.85c.

RAIL STEEL BARS

(For merchant trade)

Pittsburgh, Chicago, Gary, Cleveland, Buffalo, Birming-ham 2.10c.
On cars dock Tex. Gulf ports.. 2.45c.
On cars dock Pacific ports... 2.70c.

BILLET STEEL REINFORCING BARS

(Straight lengths as quoted by distributors)

Pittsburgh, Chicago, Gary, Birmingham, Buffalo, Cleve-land or Sparrows Pt..... 2.05c.
Detroit, delivered 2.15c.
On cars dock Tex. Gulf ports.. 2.40c.
On cars dock Pacific ports.... 2.50c.

RAIL STEEL REINFORCING BARS

(Straight lengths as quoted by distributors)

Pittsburgh, Chicago, Gary, Buf-falo, Cleveland, Youngstown or Birmingham..... 1.90c.
Detroit, delivered 2.00c.
On cars dock Tex. Gulf ports. 2.25c.
On cars dock Pacific ports..... (—)

IRON BARS

Chicago and Terre Haute 2.15c.
Pittsburgh (refined) 3.60c.

COLD FINISHED BARS AND SHAFTING*

Base per Lb.

Pittsburgh, Buffalo, Cleveland, Chicago and Gary 2.70c.
Detroit 2.75c.

* In quantities of 10,000 to 19,999 lb.

PLATES

Base per Lb.

Pittsburgh, Chicago, Gary, Birmingham, Sparrows Point, Cleveland, Youngstown, Coatesville, Claymont, Del.. 2.10c.
Philadelphia, del'd 2.15c.
New York, del'd 2.23c.
On cars dock Tex. Gulf ports.. 2.45c.
On cars dock Pacific ports.... 2.70c.
Wrought iron plates, P't'g.... 3.80c.

FLOOR PLATES

Pittsburgh or Chicago 3.35c.
New York, del'd 3.71c.
On cars dock Tex. Gulf ports. 3.70c.
On cars dock Pacific ports.... 3.95c.

STRUCTURAL SHAPES

Base per Lb.

Pittsburgh, Chicago, Gary, Buf-falo, Bethlehem or Birming-ham 2.10c.
Philadelphia, del'd 2.215c.
New York, del'd 2.27c.
On cars dock Tex. Gulf ports.. 2.45c.
On cars dock Pacific ports.... 2.70c.

STEEL SHEET PILING

Base per Lb.

Pittsburgh, Chicago or Buffalo 2.40c.
On cars dock Tex. Gulf ports.. 2.85c.
On cars dock Pacific ports ... 2.90c.

RAILS AND TRACK SUPPLIES

F.o.b. Mill

Standard rails, heavier than 60 lb., per gross ton.....\$42.50
Angle bars, per 100 lb. 2.80

F.o.b. Basing Points

Light rails (from billets) per gross ton\$40.00
Light rails (from rail steel) per gross ton 39.00

Base per Lb.

Spikes 3.15c.
Tie plates, steel 2.30c.
Tie plates, Pacific Coast ports. 2.40c.
Track bolts, to steam railroads 4.35c.
Track bolts, to jobbers, all sizes (per 100 counts)

65-5 per cent off list

Basing points on light rails are Pittsburgh, Chicago and Birmingham; on spikes and tie plates, Pittsburgh, Chicago, Portsmouth, Ohio, Welton, W. Va., St. Louis, Kansas City, Minnequa, Colo., Birmingham and Pacific Coast ports; on tie plates alone, Steelton, Pa., Buffalo; on spikes alone, Youngstown, Lebanon, Pa., Richmond, Va.

SHEETS

PRICES F.O.B. UNLESS OTHERWISE NOTED

Hot Rolled

Base per Lb.

Pittsburgh, Gary, Birming-ham, Buffalo, Sparrows Point, Cleveland, Youngstown or Middletown 2.15c.
Detroit, delivered 2.25c.
Philadelphia, delivered 2.32c.
Granite City 2.25c.
On cars dock Pacific ports... 2.75c.
Wrought iron, Pittsburgh.... 4.25c.

Cold Rolled*

Pittsburgh, Gary, Buffalo, Youngstown, Cleveland or Middletown 3.20c.
Detroit, delivered 3.30c.
Granite City 3.30c.
Philadelphia, delivered 3.52c.
On cars dock Pacific ports.... 3.80c.

* Mill run sheets are 10c. per 100 lb. less than base; and primes only, 25c. above base.

Galvanized Sheets, 24 Gage

Pittsburgh, Gary, Sparrows Point, Buffalo, Middletown, Youngstown or Birmingham 3.50c.
Philadelphia, del'd 3.82c.
Granite City 3.60c.
On cars dock Pacific ports.... 4.10c.
Wrought iron, Pittsburgh.... 6.10c.

Electrical Sheets

(F.o.b. Pittsburgh)

Base per Lb.

Field grade 3.20c.
Armature 3.55c.
Electrical 4.05c.
Special Motor 4.95c.
Special Dynamo 5.65c.
Transformer 6.15c.
Transformer Special 7.15c.
Transformer Extra Special.... 7.65c.

Silicon Strip in coils—Sheet price plus silicon sheet extra width extras plus 25c. per 100 lb. for coils. Pacific ports add 70c. a 100 lb.

Long Ternes

No. 24 unassorted 8-lb. coating f.o.b. Pittsburgh or Gary.... 3.95c.
F.o.b. cars dock Pacific ports. 4.65c.

Vitreous Enameling Stock, 20 Gage

Pittsburgh, Gary Youngstown, Middletown or Cleveland, Detroit, del'd 3.45c.
Granite City 3.60c.
On cars dock Pacific ports ... 3.95c.

TIN MILL PRODUCTS

Black Plate

Pittsburgh 3.30c.
Gary 3.40c.
Granite City 3.50c.
On cars dock Pacific ports, boxed 4.175c.

Tin Plate

Base per Lb.

Standard cokes, Pittsburgh....\$5.35
Standard cokes, Gary 5.45
Standard cokes, Granite City... 5.55

Special Coated Manufacturing Ternes

Base per Lb.

Pittsburgh\$4.65
Gary 4.75
Granite City 4.85

Roofing Terne Plate

(F.o.b. Pittsburgh)

(Per Package, 112 sheets, 20 x 28 in.)
8-lb. coating I.C.....\$12.00
15-lb. coating I.C..... 14.00
20-lb. coating I.C..... 15.00
25-lb. coating I.C..... 16.00
30-lb. coating I.C..... 17.25
40-lb. coating I.C..... 19.50

HOT ROLLED STRIP

Prices F.o.b. Unless Otherwise Noted (Widths up to 12 in.)

Base per Lb.

Pittsburgh, Chicago, Gary, Cleveland, Middletown, Youngstown or Birmingham 2.15c.
Detroit, delivered 2.25c.

Cooperage Stock

Pittsburgh & Chicago 2.35c.

COLD ROLLED STRIP*

Base per Lb.

Pittsburgh, Youngstown or Cleveland 2.95c.
Chicago and Detroit 3.05c.
Worcester 3.15c.

* Carbon 0.25 and less.

Commodity Cold Rolled Strip

Pittsburgh, Youngstown or Cleveland 3.10c.
Detroit, delivered 3.20c.

COLD ROLLED SPRING STEEL

Pittsburgh

and

Cleveland Worcester

Carbon	0.26-0.50%	2.95c.	3.15c.
Carbon	.51-.75	4.30c.	4.50c.
Carbon	.76-1.00	6.15c.	6.35c.
Carbon	1.01 to 1.25	8.35c.	8.55c.

WIRE PRODUCTS

(Carload lots, f.o.b. Pittsburgh, Chicago, Cleveland and Birmingham)
To Manufacturing Trade

	Per Lb.
Bright wire	2.60c.
Galvanized wire	2.65c.
Spring wire	3.20c.

To the Trade

	Base per Keg
Standard wire nails	\$2.45
Coated nails	2.45
Cut nails, carloads	3.60

Base per 100 Lb.

Annealed fence wire	\$2.95
Galvanized fence wire	3.35
Polished staples	3.15
Galvanized staples	3.40
Barbed wire, galvanized	3.20
Twisted barbed wire	3.20
Woven wire fence, base column	.67
Single loop bale ties, base col.	.56

Note: Birmingham base same on above items, except spring wire.
Add \$4 a ton for Mobile, Ala.; \$5 for New Orleans; \$6 for Lake Charles to above bases, except on galvanized and annealed merchant fence wire, which are \$1 a ton additional in each case.

STEEL AND WROUGHT IRON PIPE AND TUBING

Welded Pipe

Base Discounts, f.o.b. Pittsburgh District and Lorain, Ohio, Mills
F.o.b. Pittsburgh only on wrought iron pipe.

Butt Weld

Steel	Galv.	Wrought Iron
In. Black	In. Black	In. Black
1/4	56	36
1/2	59	43 1/2
3/4	63 1/2	54
1	66 1/2	58
1 1/4	68 1/2	60 1/2

Lap Weld

2	61	52 1/2
2 1/2	64	55 1/2
3 1/2	66	57 1/2
4	68	59 1/2
5	69	61 1/2
6	70	63 1/2

Butt Weld, extra strong, plain ends

1/4	54 1/2	41 1/2
1/2	56 1/2	45 1/2
3/4	61 1/2	53 1/2
1	65 1/2	57 1/2
1 1/4	67	60

Lap Weld, extra strong, plain ends

2	59	51 1/2
2 1/2	63	55 1/2
3 1/2	66 1/2	59
4	68 1/2	61 1/2
5	69	63 1/2
6	70	65 1/2

On butt-weld and lap-weld steel pipe jobbers are granted a discount of 5%. On less-than-carload shipments prices are determined by adding 25 and 30% and the carload freight rate to the base cost.

F.o.b. Gary prices are two points lower discount or \$4 a ton higher than Pittsburgh or Lorain on lap weld and one point lower discount, or \$2 a ton higher, on all butt weld 3 in. and smaller.

Boiler Tubes

Seamless Steel and Lap Weld Commercial Boiler Tubes and Locomotive Tubes. Minimum Wall.
(Net base prices per 100 ft. f.o.b. Pittsburgh in carload lots)

	Seamless	Hot	Weld
	Cold	Drawn	Hot
	Drawn	Roller	Roller
1 in. o.d.	13 B.W.G.	\$ 9.01	\$ 7.82
1 1/4 in. o.d.	13 B.W.G.	10.67	9.26
1 1/2 in. o.d.	13 B.W.G.	11.79	10.23
1 3/4 in. o.d.	13 B.W.G.	13.42	11.64
2 in. o.d.	13 B.W.G.	15.03	13.04
2 1/4 in. o.d.	13 B.W.G.	16.76	14.54
2 1/2 in. o.d.	12 B.W.G.	18.45	16.01
2 3/4 in. o.d.	12 B.W.G.	20.21	17.54
3 in. o.d.	12 B.W.G.	21.42	18.59
3 1/4 in. o.d.	12 B.W.G.	22.48	19.50
3 1/2 in. o.d.	11 B.W.G.	28.37	24.62
4 in. o.d.	10 B.W.G.	35.20	30.54
4 1/4 in. o.d.	10 B.W.G.	43.04	37.35
5 in. o.d.	9 B.W.G.	54.01	46.87
6 in. o.d.	7 B.W.G.	82.93	71.96

Extras for less carload quantities:	Base
40,000 lb. or ft. or over	5%
30,000 lb. or ft.	5%
20,000 lb. or ft.	10%
10,000 lb. or ft.	20%
5,000 lb. or ft.	30%
2,000 lb. or ft.	45%
Under 2,000 lb. or ft.	65%

CAST IRON WATER PIPE

Per Net Ton

*6-in. and larger, del'd Chicago	\$51.00
6-in. and larger, del'd New York	49.00
*6-in. and larger, Birmingham	43.00
6-in. and larger, f.o.b. dock, San Francisco or Los Angeles	52.00
F.o.b. dock, Seattle	52.00
4-in. f.o.b. dock, San Francisco or Los Angeles	55.00
F.o.b. dock, Seattle	52.00

Class "A" and gas pipe, \$3 extra
4-in. pipe is \$3 a ton above 6-in.

Prices for lots of less than 200 tons. For 200 tons and over, 6-in. and larger is \$42, Birmingham, and \$50 delivered Chicago and 4-in. pipe, \$45, Birmingham, and \$54 delivered Chicago.

BOLTS, NUTS, RIVETS, SET SCREWS

Bolts and Nuts

(F.o.b. Pittsburgh, Cleveland, Birmingham or Chicago)

Per Cent Off List

Machine and carriage bolts:	
1/2 in. & 6 in. and smaller	.65, 5 and 5*
Larger and longer up to	
1 in.	.60, 10 and 5*
1 1/2 in. and larger	.60, 5 and 5*
Lag bolts	.60, 10 and 5
Plow bolts, Nos. 1, 2, 3	
and 7	.65, 5 and 5
Hot pressed nuts, and c.p.c. and t nuts, square or hex. blank or tapped:	
1/2 in. and smaller	.65 and 5
9/16 in. to 1 in. inclusive	.60, 5 and 5
1 1/2 in. and larger	.60 and 5

* Less carload lots and less than full container quantity. Less carloads lots in full container quantity, an additional 10 per cent discount; carload lots and full container quantity, still another 5 per cent discount.

Semi-finished hexagon units, U.S.S. and S.A.E.:

1/2 in. and smaller	.60, 10 and 5
9/16 in. to 1 in. inclusive	.60, 5 and 5
1 in. and larger	.60 and 5
Stove bolts in packages, nuts attached	.70 and 5
Stove bolts in packages, with nuts separate	.70, 10 and 5
Stove bolts in bulk	.80 and 5

On stove bolts freight is allowed to destination on 200 lb. and over.

Large Rivets

(1/2-in. and larger)

Base per 100 Lb.

F.o.b. Pittsburgh, Cleveland, Chicago, Birmingham	\$3.40
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Small Rivets

(7/16-in. and smaller)

Per Cent Off List

F.o.b. Pittsburgh, Cleveland, Chicago, Birmingham	.65 and 10
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Cap and Set Screws

(Freight allowed up to but not exceeding 65c. per 100 lb. on lots of 200 lb. or more)

Per Cent Off List

Milled cap screws, 1 in. dia. and smaller	.50, 10 and 5
Milled standard set screws, case hardened, 1 in. dia. and smaller	.75 and 5
Milled headless set screws, cut thread 1/4 in. and smaller	.75
Upset hex. head cap screws U.S.S. or S.A.E. thread 1 in. and smaller	.70, 10 and 10
Upset set screws, cup and oval points	.80 and 5
Milled studs	.65

Alloy and Stainless Steel

Alloy Steel Blooms, Billets and Slabs

F.o.b. Pittsburgh, Chicago, Canton, Massillon, Buffalo, Bethlehem.
Base price, \$56.00 a gross ton.

Alloy Steel Bars

F.o.b. Pittsburgh, Chicago, Buffalo, Bethlehem, Massillon or Canton.
Open-hearth grade, base.....2.80c.
Delivered, Detroit.....2.90c.

S.A.E.	Alloy
Series	Differential
Numbers	per 100 Lb.
200 (1/2% Nickel)	\$0.35
2100 (1 1/2% Nickel)	.075
2300 (3 1/2% Nickel)	1.55

2500 (5% nickel)	\$2.25
3100 Nickel-chromium	.70
3200 Nickel-chromium	1.85
3300 Nickel-chromium	3.80
3400 Nickel-chromium	3.20
4100 Chromium-molybdenum (0.15 to 0.25 Molybdenum)	.55
4100 Chromium-molybdenum (0.25 to 0.40 Molybdenum)	.75
4600 Nickel-molybdenum (0.20 to 0.30 Mo. 1.50 to 2.00 Ni)	1.10
5100 Chrome steel (0.60-0.90 Cr.)	.35
5100 Chrome steel (0.80-1.10 Cr.)	.45
5100 Chromium spring steel	.015
6100 Chromium-vanadium bar	1.20
6100 Chromium-vanadium spring steel	.85
Chromium-nickel-vanadium	1.50
Carbon-vanadium	.85

These prices are for hot-rolled steel bars. The differential for most grades in electric furnace steel is 50c. higher. Slabs with a section area of 16 in. and 2 1/2 in. thick or over take the billet base.

Alloy Cold-Finished Bars

F.o.b. Pittsburgh, Chicago, Gary, Cleveland or Buffalo, 3.40c. base per lb. Delivered Detroit, 3.50c., carlots.

CORROSION & HEAT RESISTANT ALLOYS

(Base prices, cents per lb., f.o.b. Pittsburgh)

Chrome-Nickel	No. 304	No. 302
Forging billets	21.25c.	20.40c.
Bars	25c.	24c.
Plates	29c.	27c.
Structural shapes	25c.	24c.
Sheets	36c.	34c.
Hot-rolled strip	23.50c.	21.50c.
Cold-rolled strip	30c.	28c.
Drawn wire	25c.	24c.

Straight Chrome

No.	No.	No.	No.
410	430	442	446
Bars	18.50c.	19c.	22.50c.
Plates	21.50c.	22c.	25.50c.
Sheets	26.50c.	29c.	32.50c.
Hot strip 17c.	17.50c.	23c.	28c.
Cold stp. 22c.	22.50c.	28.50c.	36.50c.

TOOL STEEL

High speed	67c.
High-carbon-chrome	43c.
Oil-hardening	24c.
Special	22c.
Extra	18c.
Regular	14c.

Prices for warehouse distribution to all points on or East of Mississippi River are 2c. a lb. higher. West of Mississippi quotations are 2c. a lb. higher.

British and Continental

BRITISH

Per Gross Ton
f.o.b. United Kingdom Ports

Ferromanganese, export	£20 Nominal
Tin plate, per base box	20s. 3d. to 21s. 6d.
Steel bars, open hearth	£11
Beams, open-hearth	£10 12s. 6d.
Channels, open-hearth	£10 17s. 6d.
Angles, open-hearth	£10 12s. 6d.
Black sheets, No. 24 gage	£13
Galvanized sheets, No. 24 gage	£16 15s.

CONTINENTAL

Per Gross Ton, Gold & f.o.b. Continental Ports

Billets, Thomas	Nominal
Wire rods, No. 5 B.W.G.	£5 10s.
Steel bars, merchant	£5 5s.
Sheet bars	Nominal
Plate 1/4 in. and up	£6 7s.
Plate 3/16 in. and 5 mm.	£6 13s.
Sheet, 1/4 in.	£6 9s. 6d.
Beams, Thomas	£4 18s.
Angles (British)	£4 18s.
Hoops and strip, base	£5 15s.

RAW MATERIALS PRICES

PIG IRON

No. 2 Foundry

F.o.b. Everett, Mass.	\$21.75
F.o.b. Bethlehem, Birdsboro and Swedeland, Pa., and Sparrows Point, Md.	21.00
Delivered Brooklyn	23.50
Delivered Newark or Jersey City	22.53
Delivered Philadelphia	21.84
F.o.b. Neville Island, Erie, Pa., Toledo, Chicago and Youngstown*	20.00
F.o.b. Buffalo	20.00
Southern, delivered Cincinnati	20.06
Northern, delivered, Cincinnati	20.44
F.o.b. Duluth	20.50
F.o.b. Provo, Utah	22.00
Delivered, San Francisco, Los Angeles or Seattle	26.95
F.o.b. Birmingham*	16.38

* Delivered prices on southern iron for shipment to northern points are 38c. a ton below delivered prices from nearest northern basing point on iron with phosphorus content of 0.70 per cent and over.

Malleable

Base prices on malleable iron are 50c. a ton above No. 2 foundry quotations at Everett, Eastern Pennsylvania furnaces, Erie and Buffalo. Elsewhere they are the same, except at Birmingham and Provo, which are not malleable iron basing points.

Basic

F.o.b. Everett, Mass.	\$21.25
F.o.b. Bethlehem, Birdsboro, Swedeland and Steelton, Pa., and Sparrows Point, Md.	20.50
F.o.b. Buffalo	19.00
F.o.b. Neville Island, Erie, Pa., Toledo, Chicago and Youngstown*	19.50
Delivered Philadelphia	21.34
Delivered Canton, Ohio	20.89
Delivered Mansfield, Ohio	21.44
F.o.b. Birmingham	15.00

Bessemer

F.o.b. Buffalo	\$21.00
F.o.b. Everett, Mass.	22.75
F.o.b. Bethlehem, Birdsboro and Swedeland, Pa.	22.00
Delivered Newark or Jersey City	23.53
Erie, Pa., and Duluth	21.00
F.o.b. Neville Island, Toledo, Chicago and Youngstown*	20.50
F.o.b. Birmingham	21.00
Delivered Cincinnati	21.11
Delivered Canton, Ohio	21.89
Delivered Mansfield, Ohio	22.44

Low Phosphorus

Basing points: Birdsboro, Pa., Steelton, Pa., and Standish, N. Y.	\$25.50
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Gray Forge

Valley or Pittsburgh furnace ..	\$19.50
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Charcoal

Lake Superior furnace	\$25.00
Delivered Chicago	28.34

Canadian Pig Iron

Per Gross Ton

Delivered Toronto	
No. 1 fdy., sil. 2.25 to 2.75	\$26.50
No. 2 fdy., sil. 1.75 to 2.25	25.50
Malleable	26.00
Basic	25.50

Delivered Montreal

No. 1 fdy., sil. 2.25 to 2.75	\$27.50
No. 2 fdy., sil. 1.75 to 2.25	27.00
Malleable	27.50
Basic	27.00

FERROALLOYS

Ferromanganese

F.o.b. New York, Philadelphia, Baltimore, Mobile or New Orleans.	
Domestic, 80% (carload)	\$92.50

Spiegeleisen

Per Gross Ton Furnace

Domestic 19 to 21%	\$28.00
Domestic, 26 to 28%	33.00

Electric Ferrosilicon

Per Gross Ton Delivered; Lump Size

50% (carload lots, bulk)	\$69.50*
50% (ton lots in 50 gal. bbl.) ..	80.50*
75% (carload lots, bulk)	126.00*
75% (ton lots in 50 gal. bbl.) ..	139.00*

Bessemer Ferrosilicon

F.o.b. Furnace, Jackson, Ohio

Per Gross Ton

10.00 to 10.50%	\$29.50
For each additional 0.50% silicon up to 12%, 50c. a ton is added. Above 12% add 75c. per ton.	
For each unit of manganese over 2%, \$1 per ton additional. Phosphorus 0.75% or over, \$1 per ton additional.	
Base prices at Buffalo are \$1.25 a ton higher than at Jackson.	

Silvery Iron

Per Gross Ton

F.o.b. Jackson, Ohio, 5.00 to 5.50%	\$23.50
For each additional 0.5% silicon up to 12%, 50c. a ton is added. Above 12% add 75c. a ton.	
The lower all-rail delivered price from Jackson or Buffalo is quoted with freight allowed. Base prices at Buffalo are \$1.25 a ton higher than at Jackson.	
Manganese, each unit over 2%, \$1 a ton additional. Phosphorus 0.75% or over, \$1 a ton additional.	

Ferrochrome

Per lb. Contained Cr., Delivered Carlots, Lump Size, on Contract

4 to 6% carbon	10.50c.*
2% carbon	16.50c.*
1% carbon	17.50c.*
0.10% carbon	19.50c.*
0.06% carbon	20.00c.*

Silico-manganese

Per Gross Ton, Delivered, Lump Size, Bulk, on Contract

3% carbon	\$92.75
2.50% carbon	97.75
2% carbon	102.75
1% carbon	112.75

Other Ferroalloys

Ferrotungsten, per lb. contained W del., carloads, nominally	\$2.00
Ferrotungsten, lots of 500 lbs. nominally	2.05
Ferrotungsten, smaller lots, nominally	2.10
Ferrovanadium, contract, per lb. contained V., delivered	\$2.70 to \$2.90†
Ferrocolumbium, per lb. contained columbium, f.o.b. Niagara Falls, N. Y., tons lots.	\$2.25†
Ferrocobaltititanium, 15 to 18% Ti, 7 to 8% C, f.o.b. furnace carload and contract per net ton	\$142.50
Ferrocobaltititanium, 17 to 20% Ti, 3 to 5% C, f.o.b. furnace, carload and contract, per net ton	\$157.50
Ferrophosphorus, electric or blast furnace material, in carloads, f.o.b. Anniston, Ala., for 18%, with \$3 unit-age, freight equalized with Rockdale, Tenn., per gross ton	\$58.50
Ferrophosphorus, electrolytic, 23-26% in car lots, f.o.b. Monsanto (Siglo), Tenn., 24%, per gross ton, \$3 unit-age, freight equalized with Nashville	\$75.00
Ferromolybdenum, per lb. Mo. f.o.b. furnace	95c.
Calcium molybdate, per lb. Mo. f.o.b. furnace	80c.

*Spot prices are \$5 per ton higher
†Spot prices are 10c. per lb. of contained element higher

ORES

Lake Superior Ores

Delivered Lower Lake Ports

Per Gross Ton

Old range, Bessemer, 51.50%	\$5.25
Old range, non-Bessemer, 51.50% ..	5.10
Mesabi, Bessemer, 51.50%	5.10
Mesabi, non-Bessemer, 51.50% ..	4.95
High phosphorus, 51.50%	4.85

Foreign Ore

C.I.F. Philadelphia or Baltimore

Per Unit

Iron, low phos., copper free, 55 to 58% dry, Algeria, nominal ..	17.00c.
Iron, low phos., Swedish, average, 68½% iron. Nominally 17 to 18c.	
Iron, basic or foundry, Swedish, aver. 65% iron. Nominally 15c.	
Iron, basic or foundry, Russian, aver. 65% iron.	Nominal
Man., Caucasian, washed 52%	40c.
Man., African, Indian, 44-48%	35c.
Man., African, Indian, 49-51%	Nominally 38c.
Man., Brazilian, 46 to 48½%	Nominally 38c.

Per Short Ton Unit

Tungsten, Chinese, Wolframite, duty paid, delivered	\$18.50
Tungsten, domestic, scheelite delivered	\$19.00 to 20.00
Chrome ore (lump) c.i.f. Atlantic Seaboard, per gross ton: South African (low grade)	15.00
Rhodesian, 45%	21.00
Rhodesian, 48%	24.50
Turkish, 48-49%	24.00 to 25.00
Turkish, 45-46%	22.50 to 23.00
Turkish, 44%	18.00 to 18.50
Chrome concentrates (Turkish) c.i.f. Atlantic Seaboard, per gross ton: 50%	24.50 to 25.50
48-49%	24.50 to 25.00

FLUORSPAR

Per Net Ton

Domestic washed gravel, 85-5, f.o.b. Kentucky and Illinois mines, all rail	\$18.00
No. 2 lump, 85-5, f.o.b. Kentucky and Ill. mines	\$18.00 to 19.00
Foreign, 85% calcium fluoride, not over 5% silicon, c.i.f. Atlantic ports, duty paid	24.50
Domestic No. 1 ground bulk, 95 to 98% calcium fluoride, not over 2½% silicon, f.o.b. Illinois and Kentucky mines	31.50

FUEL OIL

Per Gal

No. 2 or diesel, f.o.b. Bayonne ..	4.00c.
No. 6, f.o.b. Bayonne	2.26c.
Del'd Chicago, No. 5 Bur. Stds.	3.25c.
Del'd Chicago, No. 6 Bur. Stds.	2.75c.
Del'd Cleve'd, No. 3 distillate	5.50c.
Del'd Cleve'd, No. 4 industrial	5.00c.
Del'd Cleve'd, No. 5 industrial	3.25c.
Del'd Cleve'd, No. 6 industrial	3.00c.

COKE

Per Net Ton

Furnace, f.o.b. Connells-ville, Prompt	\$3.75
Foundry, f.o.b. Connells-ville, Prompt	\$4.75 to 5.50
Foundry, by-product, Chicago ovens	10.25
Foundry, by-product, del'd New England	12.50
Foundry, by-product, del'd Newark or Jersey City	10.88 to 11.40
Foundry, by-product, Philadelphia	10.95
Foundry, by-product, delivered Cleveland ..	11.05
Foundry, by-product, delivered Cincinnati ..	9.75
Foundry, Birmingham ..	7.50
Foundry, by-product, del'd St. Louis industrial district	10.75 to 11.00
Foundry, from Birmingham, f.o.b. cars dock, Pacific ports	14.75

Exports (In Gross Tons)

	May		Five Months Ended May	
	1938	1937	1938	1937
Pig iron	33,931	117,598	191,141	200,657
Ferromanganese and spiegeleisen	45	6	159	1,232
Other ferroalloys	28	269	550	890
Scrap, iron and steel	371,745	630,671	1,624,795	1,620,114
Scrap, tin plate	1,336	3,495	7,832	13,260
Waste-waste tin plate	1,239	3,942	3,620	18,989
Pig iron, ferroalloys and scrap	408,324	755,981	1,828,097	1,855,142
Ingots, blooms, billets, sheet bars	10,752	24,480	108,035	41,851
Ingots, etc., alloy steel incl. stainless	4,063	336	4,711	1,247
Skelp	683	10,084	6,189	31,537
Wire rods	2,098	5,872	13,575	20,396
Semi-finished steel	17,596	40,772	132,510	95,031
Bars, plain and reinforcing	11,308	12,076	67,007	45,750
Bars, alloy steel	543	870	2,023	2,916
Bars, stainless steel	26	8	198	81
Iron bars	18	571	699	1,148
Plates, plain and fabricated	22,002	25,995	104,237	105,875
Plates, alloy steel	466	852	1,763	2,163
Plates, stainless	18	5	132	11
Sheets, galvanized steel	6,595	5,162	26,809	27,088
Sheets, galvanized iron	259	516	1,549	2,572
Sheets, black, plain steel	13,483	22,570	83,620	96,531
Sheets, alloy steel	141	1,098	1,931	1,239
Sheets, stainless	88	79	1,049	262
Sheets, black iron	589	560	2,485	3,605
Hoops, bands, strips, plain steel	4,050	7,990	25,149	49,771
Hoops, bands, strip steel, alloy	19	43	112	520
Hoops, bands, strip steel, stainless	38	44	250	263
Tin plate and taggers' tin	9,078	28,414	76,387	126,451
Terne plate (including long terne)	233	498	2,211	2,775
Structural shapes, plain material	12,670	8,677	41,860	48,086
Structural material, fabricated	1,508	3,135	17,268	14,150
Sheet piling	374	175	1,753	2,050
Tanks, steel	1,628	3,074	13,820	11,907
Steel rails	1,454	9,486	37,657	47,271
Rail fastenings, switches, spikes, etc.	514	2,043	4,954	5,106
Boiler tubes	2,915	1,386	7,561	5,248
Casing and oil line pipe	6,513	6,957	38,995	40,358
Pipe, black and galv., welded steel	1,848	4,214	9,155	16,735
Pipe, black and galv., welded iron	383	2,380	1,977	3,729
Plain and galvanized wire	3,760	5,675	16,673	23,762
Barbed wire and woven wire products	2,837	4,250	9,504	18,511
Wire rope and other products	909	1,345	4,494	5,981
Nails and tacks	2,297	2,336	8,493	11,123
Bolts, nuts, rivets and washers except track ..	739	1,321	3,532	4,921
Other finished steel	156	410	1,861	1,338
Roll and finished steel	109,459	164,215	617,168	731,297
Cast iron pipe and fittings	1,846	3,883	9,302	16,201
Malleable iron screwed fittings	334	664	1,306	2,089
Carwheels and axles	2,092	1,504	8,677	6,677
Castings, iron and steel	630	1,228	2,705	5,928
Castings, alloy steel, incl. stainless	58	179	283	740
Forgings, plain	258	671	3,398	2,548
Forgings, alloy steel, incl. stainless	42	114	212	388
Castings and forgings	5,260	8,243	25,883	34,571
Total	540,639	969,211	2,603,658	2,716,041

Imports (In Gross Tons)

	May		Five Months Ended May	
	1938	1937	1938	1937
Pig iron	1,795	6,361	19,465	52,324
Sponge iron	4	302	317	857
Ferromanganese ¹	951	2,427	4,276	13,834
Spiegeleisen	777	787	4,612	6,637
Ferrochrome ²	52	42	37	201
Ferrosilicon ³	52	232	251	699
Other ferroalloys ⁴	395	9,173	856	27,685
Scrap	3,974	19,324	29,815	102,289
Pig iron, ferroalloys and scrap	42	198	345	874
Steel ingots, blooms, etc.	461	1,293	2,193	7,275
Billets, whether solid or hollow	503	1,491	2,542	8,273
Wire rods	152	771	521	3,410
Concrete reinforcement bars	24	273	420	1,145
Hollow steel bars	2,596	4,036	8,455	24,921
Merchant steel bars	37	94	284	926
Iron slabs	7	119	110	176
Boiler and other plate	119	1,536	4,794	7,171
Sheets, skelp, and saw plate	1	2	35	55
Die blocks or blanks, etc.	7	34	27	105
Tin plate	6,533	8,962	18,348	43,009
Structural shapes	269	214	1,668	1,068
Sheet piling	544	438	1,814	3,707
Rails and track material	1,354	943	10,834	4,804
Welded pipe	5	4,076	24	12,538
Other pipe	2,140	2,393	7,883	349
Cotton ties	727	962	6,960	12,953
Other hoops and bands	134	484	528	6,510
Barbed wire	161	366	5	2,438
Round iron and steel wire	150	306	1,196	8
Telegraph and telephone wire	124	428	941	1,505
Flat wire and steel strips	568	1,159	662	1,460
Wire rope and strand	9	16	1,647	1,647
Other wire	30	47	8,711	246
Nails, tacks, and staples	15,691	27,540	147	134
Bolts, nuts, and rivets	1	45	68,641	139,000
Horse and mule shoes	350	178	37	205
Roll and finished steel	295	472	858	1,106
Malleable iron pipe fittings	20,814	49,050	1,202	1,970
Cast iron pipe and fittings			103,098	252,843
Castings and forgings				
Total				

¹ Manganese content. ² Chrome content. ³ Silicon content. ⁴ Alloy content.

Iron-Steel Import and Export Value Lower in May

Exports of iron and steel products (excluding scrap) from the United States in May again recorded a decline, according to a preliminary report released by the Metals and Minerals Division of the Department of Commerce. May shipments amounted to 166,319 gross tons valued at \$10,899,772 in comparison with 179,250 tons valued at \$12,061,586 in the preceding month. These totals compared with an export trade of 331,103 tons in May, 1937.

Pig iron was the outstanding product shipped in May, and, of the 33,931 tons exported, 31,944 tons went to Japan. Plate shipments ranked next with 22,486 tons against 23,892 tons in April. Steel ingots were exported to a total of 14,815 tons against 7774 tons, the leading outlets being Japan (12,902 tons), and Canada (1849 tons).

Exports of scrap in May totaled 374,320 tons valued at \$5,520,068, in comparison with 309,952 tons, valued at \$4,846,323 in the previous month.

May Imports of Iron and Manganese Ores

	(In Gross Tons)		Manganese Concentrates, 35 Per Cent or Over	
	Iron Ore			
	1938	1937	1938	1937
Canada	155,200	109,101	84	96
Cuba	1	39,000	7,497	2,909
Chile	155,200	109,101	84	96
Spain	155,200	109,101	84	96
Norway	155,200	109,101	84	96
Sweden	155,200	109,101	84	96
French Africa	155,200	109,101	84	96
Russia	155,200	109,101	84	96
India	155,200	109,101	84	96
Brazil	155,200	109,101	84	96
Gold Coast	155,200	109,101	84	96
Other countries	5,505	25,735	18,826	51,838
Total	185,664	214,695	18,826	51,838

United States Imports of Pig Iron by Countries of Origin

	(In Gross Tons)		Five Months Ended May	
	May			
	1938	1937	1938	1937
United Kingdom	42	42	42	50
British India	498	4,274	9,659	27,874
Germany	100	100	610	610
Netherlands	1,004	1,541	5,362	15,065
Canada	51	446	1,064	3,469
France	134	134	134	134
Belgium	200	200	3,338	375
Norway	200	200	3,338	375
Sweden	200	200	3,338	375
Russia	200	200	3,338	375
All others	200	200	3,338	375
Total	1,795	6,361	19,465	52,324

THIS WEEK'S MACHINE ...TOOL ACTIVITIES...

Cleveland Looks to Fall, With Current Orders Light

CLEVELAND—The belief continues strong that sales and inquiries will show marked improvement in the fall. Current activity remains light in view of the numerous vacation shutdowns and the lack of tangible evidence that the corner has been turned. The used equipment market is moderately active, although volume sales of large tools are lacking.

No Upturn in Orders Expected Before Fall

CHICAGO—Machine tool orders were extremely few in June. Little increase is looked for until fall when a sharp upturn in business is expected. Recent buying here centers around the John Deere list of machines for production of a medium sized tractor, and Studebaker's retooling for a light car. Many plants in this district either are shut down or operating only a few days weekly. Some, however, because of Government and foreign demand, are working full time and are hooked to the end of the year.

Slight Improvement Seen By Cincinnati Builders

CINCINNATI—A slight improvement in domestic machinery demand brought a glimmer of additional optimism to the district market during the past week. Among inquirers were automobile and household appliance manufacturers.

Lathes are still reasonably active while millers, grinders and broaching machinery stepped ahead of the previous week's level. Heavy machinery shows no change, while drills are almost totally quiet.

The market feeling has improved in the past week, and anticipated revival in early fall with probability of fair summer demand is frequently predicted. At least plant operation is being maintained, with some holding forces intact for the anticipated revival.

Navy Figures in Future Machinery Business

NEW YORK—Sales of machine tools are still dragging along the bottom, but inquiries are in greater volume. A firm with a contract to make diesel engines for the Navy is inquiring for several machines and during the past week a number of sellers were concentrating on this account. It is understood that the Brooklyn Navy yard's large list of machinery has been sent to Washington for final approval and check against the 1938-39 budget. This implies that formal bids will not be called for for several weeks, as specifications have not yet been drawn.

The pick-up in the sale of cotton yardage has encouraged the textile machinery manufacturers in New England who are looking forward to the early release of machinery orders held up indefinitely some months back. Machine tool orders are expected to follow such action.

A Japanese Army commission is said to be in New York buying small machine

tools for Japanese arsenals. There are also some inquiries out from Chinese sources.

New Paint Equipment Being Put in Detroit Plants

DETROIT—Construction of more than \$300,000 worth of ovens and new paint shop drying equipment is under way in a Detroit shop and numerous new gas fired heating units are on order to supply Chrysler and Briggs for a projected change from lacquer finish to synthetic enamels or paint. A rush order on the work was issued a short time ago. Installation of new ovens in the Briggs Mel-drum Avenue, Chrysler-Kercheval plant and the new Dodge plant on Mound Road, is scheduled for Aug. 15.

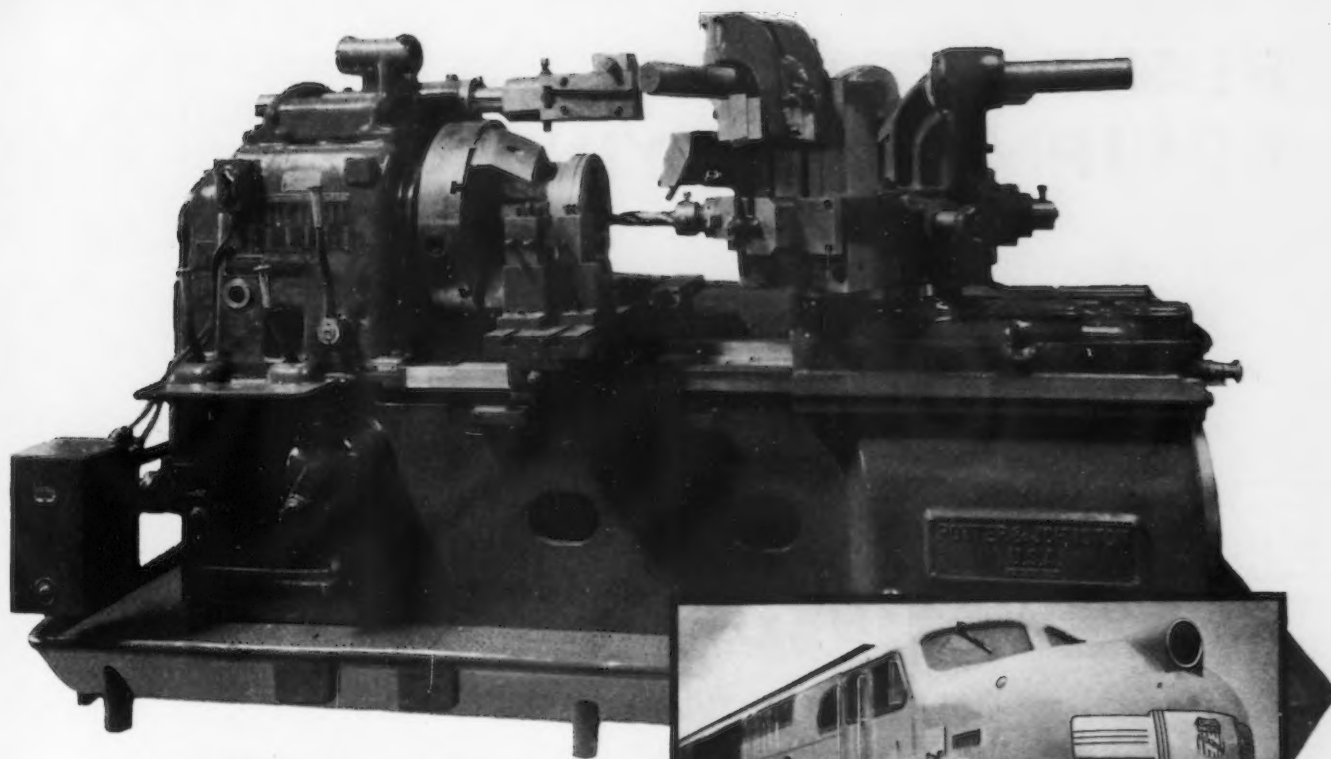
Further activity in the new industrial area near the Dodge truck plant includes Briggs factory. Originally intended for the production of automobile garnish moldings and other similar items of trim, it is now obvious that Briggs has changed its plans and is transferring the Briggs plumbing ware division to the new factory. The huge controlled-atmosphere annealing furnace, erected a few years ago in Briggs' east side plant, and all the equipment for enameling bath tubs and kitchen equipment is being moved to the new site as rapidly as possible.

Machine tool builders, with only a small volume of replacement business on their books now for the automobile industry, have been given the word in the last week that next year will be the busiest year they have ever experienced in this territory. Plans for 1940 model production are being formulated by at least two major manufacturers today. Radical changes are contemplated for models to be sold in 1940 and production plans on a grandiose scale are on paper. There is considerable promise that they will materialize.

THE NEW IRVIN WORKS FROM THE AIR



H. H. HARRIS, president of the General Alloys Co., Boston, makes a hobby of aviation and aerial photography. He made this photograph of the new Irvin works of Carnegie-Illinois Steel Corp. while flying over Clairton, Pa.



P & J Keeps Pace

with Special Equipment for Tooling Diesel Engine Cylinder Heads

Every Diesel Engine Cylinder Head requires several distinct and exact operations. To facilitate growing production demands, leading Diesel Engine manufacturers are using the Potter & Johnston 5-DE Power-Flex Automatic Chucking and Turning Machine with special tool adaptation for performing the 1st, 2nd and 4th operations.

Modern transportation methods make no concessions to mediocrity. There must be perfect



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performance in order to maintain ultra-speed schedules as well as passenger safety, comfort and accommodation.

The origin of this smoothly efficient performance can be traced directly back to the shops where the Diesel Engine parts are machined to an nth degree accuracy. P & J Machines exemplify that accuracy.

Keep up with the field by streamlining your production with P & J Automatics.

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FACTORY REPRESENTATIVES:

J. Potter Cunningham, Headquarters at Factory: New England States and Eastern New York & New Jersey: A. W. Stone, 986 Kenyon Ave., Plainfield, N. J.; Western New York & New Jersey: Eastern Pennsylvania, Maryland and Delaware: G. Tell DuBois, 8-154 General Motors Building, Detroit, Michigan; Michigan and the City of Toledo, Ohio: Louis K. Voelk, 14014 Woodworth Road, East Cleveland, Ohio; Ohio—with the exception of Toledo, and Western Pennsylvania: Harry I. Schuster, 743 North Fourth Street, Milwaukee, Wisconsin; Illinois, Missouri, Wisconsin, Iowa and Indiana: **AGENCIES:** Star Machinery Company, 1741 First St., South, Seattle, Washington; Henes-Morgan Machinery Co., 2026 Santa Fe Ave., Los Angeles, Calif.;

Jenison Machinery Co., 20th & Tennessee Sts., San Francisco; Wessendorff, Nelms & Co., Inc., 317 Preston Ave., Houston, Texas; Arthur Jackson Machine Tool Co., 69 Front Street West, Toronto 2, Ontario, Canada; Arthur Jackson Machine Tool Co., 437 Grosvenor Ave., Montreal, Canada; Burton, Griffiths & Co., Ltd., Birmingham, England; R. S. Stokvis et Fils, Paris, France; Rotterdam, Holland; and Brussels, Belgium; Maskinaktiebolaget Karlebo, Stockholm 1, Sweden; Ing. Ercole Vaghi, Milano, Italy; Yamatake & Co., Ltd., Tokyo, Japan (Imperial Export Co., 44 Whitehall St., New York, N. Y.); Almacoa, Zurich, Switzerland; Be-Te-Ha, Warschau, Poland; Schuchardt et Schutte, Budapest, Hungary; Bourla Freres, Istanbul, Turkey.

PLANT EXPANSION AND EQUIPMENT BUYING

◀ NORTH ATLANTIC ▶

Western Electric Co., Inc., 195 Broadway, New York, telephone instruments and equipment, plans new three-story factory branch, storage and distributing plant at Atlanta, Ga. Cost over \$65,000 with equipment. W. H. Kattelle, first noted address, is company engineer.

Department of Public Markets, Weights and Measures, City of New York, 139 Centre Street, Carl W. Kimball, deputy commissioner, plans one-story freight terminal, 68 x 325 ft., at Bronx Terminal Market, 151st and Exterior Streets. Cost \$200,000 with freight-handling, loading and other equipment, one-half of which is being secured through Federal aid.

Standard Oil Co. of New Jersey, 26 Broadway, New York, has arranged fund of about \$125,000,000 for expansion and improvements in properties, of which about \$30,000,000 will be used for extensions and betterments in oil refineries, close to \$20,000,000 for expansion and development of marketing facilities, and over \$100,000,000 for new steel tankers for transportation; remainder of fund will be used for other construction and maintenance, and oil field expansion and developments. Company has arranged immediate financing through bond and note issues to total \$85,000,000, fund to be used in connection with projects noted.

Continuous Sales Corp., 50-02 Twenty-seventh Street, Long Island City, plumbing and heating equipment and supplies, has leased 20,000 sq. ft. in building at First and Essex Streets, Harrison, N. J., for new branch storage and distributing plant.

Socony-Vacuum Oil Co., Inc., 26 Broadway, New York, has asked bids on general contract for new bulk oil plant at Atlantic City, N. J., including steel tanks, pumping units and other facilities. Cost over \$50,000 with equipment.

Bureau of Supplies and Accounts, Navy Department, Washington, asks bids until July 19 for magnet wire (Schedule 3907), carbon dioxide fire-extinguishing systems (Schedule 3917); until July 22, two motor-driven swing frame grinding machines (Schedule 3943) for Brooklyn Navy Yard; until July 26, boiler tube brushes and brush refills (Schedule 3918) for Brooklyn and Mare Island yards.

Commanding Officer, Ordnance Department, Watervliet Arsenal, Watervliet, N. Y., asks bids until July 18 for alloy steel forgings (Circular 124); until July 28, one hydraulic straightening press (Circular 126).

Gottlieb & Sons, Inc., 82 Paris Street, Newark, N. J., iron and steel products, has leased one-story building at 131-33 South Street, for production of small ornamental iron and steel specialties.

Quartermaster Office, Camp Dix, near Wrightstown, N. J., has secured appropriation of \$935,000 for new buildings at local depot, including one-story equipment warehouses, power house, machine and repair shop, general utility shop, automobile service and garage building, gasoline and oil storage building and facilities, and other structures.

Campbell Soup Co., Cooper Street, Camden, N. J., has let general contract to Thomas F. Gibson Co., Commercial Trust Building, Philadelphia, for four-story addition, 50 x 80 ft. Cost close to \$75,000 with equipment.

Commanding Officer, Ordnance Department, Picatinny Arsenal, Dover, N. J., asks bids until July 25 for hydraulic smokeless powder presses in lots of 20 to 36 units, 30 to 48, and 40 to 64 units (Circular 1096); until July 27, one motor-driven nitrocellulose centrifugal and 20 to 40 nitrocellulose acid centrifugals (Circular 1098), 60 to 180 mechanical dippers (Circular 1119).

Bureau of Supplies and Accounts, Navy Department, Washington, asks bids until July

22 for one 30-in. motor-driven, metal-cutting band saw (Schedule 3933); until July 26, one set of rheostats and reactors (Schedule 3958), nickel-copper-silicon alloy castings (Schedule 3953) for Philadelphia Navy Yard.

Department of Supplies and Purchases, City Hall Annex, Philadelphia, Wilhelm F. Knauer, director, asks bids until July 19 for following equipment for period from July 20-Dec. 31, 1938: Fire hydrants and couplings (Class 350), laundry presses, air compressor (Class 352), hamper and washroom trucks (Class 352), plumbing equipment, valves, fittings, etc. (Class 354), chain, conveyor parts, etc. (Class 357).

Commanding Officer, Ordnance Department, Frankford Arsenal, Philadelphia, asks bids until July 25 for one or two primer manufacture machines, caliber 0.50, complete unit (Circular 1279), steel nuts, steel bolts and steel lock washers (Circular 1281), six drawing dies for 75 mm. cartridge case (Circular 1278), 10,300 steel shell forgings, finished forged cavity, for 3-in. shells (Circular 3), one electric gaging machine (Circular 4).

◀ NEW ENGLAND ▶

Commanding Officer, Ordnance Department, Springfield Armory, Springfield, Mass., asks bids until July 18 for 3568 metal shields (Circular 1), four toolroom, hand-feed, horizontal surface grinders (Circular 3); until July 27, one universal tool and cutter grinder and attachments (Circular 310), four heat-treating containers (Circular 311).

State Department of Public Works, State Office Building, Hartford, Conn., plans power plant, machine shop, automobile service and garage building, and other mechanical shops at new State training school at Southbury, Conn., where large tract has been selected. Cost \$5,726,000. Financing for \$2,576,000 of this amount has been arranged through Federal aid.

Bureau of Yards and Docks, Navy Department, Washington, will prepare plans soon for extensions and improvements in electric manufacturing shop at Portsmouth, N. H., Navy Yard, cost \$90,000 with equipment; also for extensions and improvements in foundry buildings, cost \$40,000 with equipment; one-story addition to storehouse, cost \$360,000 with equipment, and extensions and improvements in power plant, cost about \$100,000 with equipment. Appropriations have been authorized.

Simonds Saw & Steel Co., Fitchburg, Mass., will soon remove manufacturing operations to new local one-story windowless plant, completed in 1931 but not occupied since that time, totaling about five acres of floor space. Main saw and knife works, also file and hacksaw plants, will be located in new structure, as well as bandsaw and crosscut saw works, Chicago, which will be removed to Fitchburg and production consolidated with other divisions.

◀ BUFFALO DISTRICT ▶

Brockway Motor Co., Central Avenue, Cortland, N. Y., motor trucks, buses, parts, etc., has let general contract to Marshall & Haley, Cortland, for one-story addition, 100 x 250 ft. Cost over \$75,000 with equipment.

Board of Education, Batavia, N. Y., has been authorized at special election to arrange fund of \$45,250 through bond issue and Federal aid for one-story addition to West school, for new vocational department, bids to be asked soon.

Rochester Gas & Electric Co., 89 East Avenue, Rochester, N. Y., plans bond issue of \$1,657,000, proceeds to be used for expansion and improvements in power plants, transmis-

sion and distributing lines, and other properties.

◀ SOUTH ATLANTIC ▶

South Carolina Public Service Authority, Charleston, S. C., Burnet, R. Maybank, chairman, has engaged Harza Engineering Co., 205 West Wacker Drive, Chicago, consulting engineer, to make surveys and plans for Santee-Cooper power and navigation project in Southeastern part of State, comprising development of Santee and Cooper Rivers, with main power dam and hydroelectric generating station near Wilson Landing. Project will include transmission and distributing lines, power substations and switching stations and other structures. Cost estimated at \$37,500,000. Initial financing for \$6,000,000 has been arranged through Federal aid and remainder of fund will be secured through that source. F. R. Sweeny, Anderson, S. C., is chief engineer for authority.

Bureau of Yards and Docks, Navy Department, Washington, will prepare plans for addition to sheet metal shop at Charleston, S. C., Navy Yard, cost about \$110,000 with equipment; also for one-story electric equipment shop, cost \$60,000 with equipment, and additional water storage facilities, cost \$60,000. Appropriations have been approved and bids will be asked soon.

◀ WASHINGTON DIST. ▶

Bureau of Yards and Docks, Navy Department, Washington, asks bids until July 20 for steam-driven air compressors, each 3000 to 5000 cu. ft. per min. capacity; surface condensers, vacuum pumps and auxiliary equipment for Norfolk and Portsmouth, Va., and Portsmouth, N. H., Navy yards (Specifications 8809); until July 27, steel extension to hangar at Naval Fleet Air Base, Coco Solo, C. Z. (Specifications 7993); also bids (no closing date stated) for turbo-alternators, condensers and accessory equipment for New York, Boston, Mare Island and Puget Sound yards (Specifications 8818).

Board of District Commissioners, District Building, Washington, asks bids until July 18 for three core drills with bits, etc. Board has rejected bids recently received for new vocational school building at Blue Plains, D. C., and will ask new bids soon.

United States Coast Guard Headquarters, Washington, asks bids until July 19 for four emergency lever packs and two journal jacks (Circular CG-3478), one double-acting steam pile hammer (Circular CG-3477), six 2-ton trolley assemblies for jib cranes, adjustable to nine sizes of I-beams, with 2-ton hand-operated spur gear ball bearing chain hoists (Circular CG-3479), one 48-in. throat shear and one 48-in. throat punch (Circular CG-3480), two rail hugger chain hoists, two to six electric chain hoists (Circular CG-3481), one electric-operated portable crane (Circular CG-3482), all for installation at Curtis Bay, Md., station.

Bureau of Supplies and Accounts, Navy Department, Washington, asks bids until July 19 for steel wire nails (Schedule 3956); until July 26 for 62,000 lb. of steel wool (Schedule 3909), electric cable (Schedule 3902), wire cloth (Schedule 3910); until July 29, about 19,000 galvanized iron buckets (Schedule 3934) for Eastern and Western yards; until July 22, one 60-kw. electric furnace, tilting type (Schedule 3928) for Washington yard; two motor-driven engine lathes and attachments (Schedule 3948) for Alexandria, Va., yard.

◀ SOUTH CENTRAL ▶

Board of Public Works, City Hall, Nashville, Tenn., George Moore, supervisor of buildings, plans 11 one-story shops and mechanical buildings on Rolling Mill Hill, comprising main garage, repair and service building, 65 x 300 ft., two similar garage units, each 65 x 195 ft., and one garage for motor trucks, 65 x 240 ft.; machine and repair shop, 50 x 105 ft.; equipment warehouse and shop for waterworks department, 50 x 160 ft., with adjoining structure, 30 x 125 ft.; equipment warehouse and shop for electric



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light and power department, 50 x 120 ft., with adjoining shed, 30 x 90 ft.; boiler plant, 40 x 50 ft., for central heating, office building and several smaller utility structures. Cost \$160,000 with equipment, of which about \$120,000 is being secured through Federal aid.

Director of Purchases, Tennessee Valley Authority, Knoxville, Tenn., asks bids until July 21 for deep-well motor-driven pumping units with accessories for unwatering service at Chickamauga hydroelectric power plant.

City Council, Aberdeen, Miss., asks bids until July 22 for a municipal electrical distribution system (Contract No. 1), cost about \$105,000. Beard Engineering Co., 2606 Oakview Terrace, St. Louis, is consulting engineer.

United States Engineer Office, Vicksburg, Miss., asks bids until July 18 for 22,500 lb. of wire nails (Circular 5), one heat exchanger for lubricating oil and one heat exchanger for engine cooling water (Circular 6), one vertical duplex fuel oil steam pump (Circular 7).

◀ WESTERN PA. DIST. ▶

Westinghouse Electric & Mfg. Co., East Pittsburgh, plans one-story addition to Sharon works at Sharpsville, Pa., for storage and distribution. Cost about \$150,000 with equipment. Work will begin soon on razing several old structures now on site to make way for new unit.

General State Authority, 600 North Second Street, Harrisburg, Pa., A. S. Janeway, executive director, asks bids on general contract until Aug. 19 for group of units for new State industrial school for boys at White Hill, Cumberland County (Part 2). Estimated cost \$2,142,000. Financing in part has been arranged through Federal aid. C. J. Lappley and H. Hornbostel, Riverview Manor, Harrisburg, are architects.

◀ SOUTHWEST ▶

Board of Education, Library Building, Kansas City, Mo., George C. Tinker, secretary, has arranged financing through Federal aid for two, three and four-story and basement addition to high school at Fifteenth Street and Forest Avenue, for new Lathrop trade and manual training school. Cost about \$505,000 with equipment. Charles A. Smith is architect, and Nate W. Downes, mechanical engineer, both Finance Building.

Common Council, Cherokee, Okla., plans extensions and improvements in municipal electric power plant, including additional equipment. Cost about \$132,000. Financing is being arranged through Federal aid. C. H. Guernsey is city engineer in charge.

Royal Crown Bottlers, Inc., Kansas City, Mo., recently organized, care of E. M. Dodd, president, United States Cold Storage Co., 500 East Third Street, has let general contract to E. W. Sproul Co., West James and South Hoyne Streets, Chicago, for one-story mechanical-bottling plant on Locust Street, 150 x 150 ft. Cost close to \$150,000 with equipment. A Epstein, 2001 West Pershing Road, Chicago, is architect and engineer.

Southern Compress Co., Brinkley, Ark., plans new four-unit compress plant, with capacity for handling 60,000 bales of cotton at one time. Work on initial unit will begin at once. Cost over \$75,000 with presses and other equipment.

Southland Paper Mills, Inc., Lufkin, Tex., E. L. Kurth, president, and head of Angelina Lumber Co., Lufkin, recently organized, has let general contract to Merritt-Chapman & Scott Corp., 17 Battery Place, New York, for new pulp and paper mill at Lufkin. It will be built in four main operating units, each comprising several one and multi-story buildings. Cost about \$7,000,000. George F. Hardy, 305 Broadway, New York, is consulting engineer.

◀ OHIO AND INDIANA ▶

Timken Foundation, Canton, Ohio, has asked bids on general contract for new multi-story vocational high school near city. Cost about \$1,000,000 with equipment. Charles E. Firestone, 1324 Cleveland Avenue, N.W., Canton, is architect.

Board of Miami County Commissioners, Courthouse, Troy, Ohio, plans one-story machine and repair shop, and large garage for County motor trucks and cars, near Fairgrounds. Cost over \$85,000 with equipment. Financing is being arranged through Federal aid.

Old Fort Mills, Inc., Marion, Ohio, plans addition to soy bean-processing and grinding plant, including additional equipment to nearly double present capacity. Cost about \$100,000 with machinery.

City Council, Garrett, Ind., will take bids soon for extensions and improvements in municipal electric power plant, including new 500-hp. watertube boiler, automatic stoker, mechanical blast fan, high and low pressure piping and auxiliary equipment. Cost about \$45,000. Bevington-Williams, Inc., Indiana Pythian Building, Indianapolis, is consulting engineer.

Board of School Trustees, Muncie, Ind., plans manual training department in new two-story and basement junior high school. Cost about \$235,000. A bond issue has been arranged in that amount. Herbert F. Smenner, 108 East Washington Street, is architect.

◀ MICHIGAN DISTRICT ▶

Bohn Aluminum & Brass Corp., Lafayette Building, Detroit, has let general contract to Kriehoff Co., 6661 French Road, for one-story addition to brass works on Joseph Campau Avenue for expansion in furnace division. Cost over \$65,000 with equipment. H. W. Buckheit, first noted address, is architect.

Reynolds Blower Co., Grand Rapids, Mich., mechanical blowers, fans, etc., has plans for one-story factory, 60 x 120 ft. Cost close to \$50,000 with equipment.

Bevan Air-Conditioning Corp., Highland Park, Mich., has leased one-story building at Mount Clemens, Mich., and will remodel for new plant. Facilities will be installed for production of a new oil-burning furnace unit, now being perfected by company. Present plant will be removed to new location and capacity increased.

McKenna Oil Corp., Sterling, Mich., has arranged for new stock issue to total about \$825,000, a considerable part of proceeds to be used for new drilling machinery at oil properties, oil storage and distributing facilities, and other development.

Stearman Aircraft Division of Boeing Airplane Co., Wichita, Kan., has announced an expansion program which will more than double floor area of the engineering department, thus providing more plant space for manufacturing.

◀ MIDDLE WEST ▶

City Council, Batavia, Ill., plans new municipal electric power plant for power supply for municipal waterworks station, where pumping machinery will be electrified and other improvements made. Additional water storage facilities will be installed. Cost over \$85,000 with equipment. Wells Engineering Co., Geneva, Ill., is consulting engineer.

Fox Distributing Co., 1225 South Wabash Avenue, Chicago, automobile parts and equipment, has leased a two-story building, 100 x 150 ft., at 2527-37 South Calumet Avenue, for new storage and distributing plant.

Bureau of Reclamation, Denver, asks bids until July 18 for steel crane girders for Seminole hydroelectric power plant, Kendrick project, Wyo. (Specifications 1098-D).

Dakota Refining Co., Inc., Cut Bank, Mont., care of Wilfred Nadeau, Cut Bank, head, recently organized with capital of \$500,000, has plans for new oil refinery at Minot, N. D., to comprise several one and multi-story units for production of gasoline, fuel oil and other refined oils, with steel tank storage and distributing department and other structures. Cost about \$300,000 with equipment. New company will be operated by a group of independent interests, including Mr. Nadeau, A. E. Cobb and J. F. Curran, all of Cut Bank; and W. M. Fulton, Shelby, Mont.

State Executive Council, Statehouse, Denver, James Merrick, superintendent of State

buildings, in charge, plans new steam-electric light and power plant for central service for State house and other State buildings in that area, including central heating service, with underground pipe lines and operating facilities. Site has been selected at East Fourteenth Avenue and Lincoln Street. Cost about \$700,000 with equipment. Financing is being arranged through Federal aid.

Tyler Brothers Coca-Cola Bottling Works, Inc., Atlantic, Iowa, has plans for new two-story mechanical-bottling works, about 90 x 100 ft. Cost close to \$50,000 with equipment.

Safway Steel Scaffolds Co., Milwaukee, manufacturer of tubular steel scaffolding, has announced formation of Safway Steel Scaffolding Co. of Southern California, with offices at 1056 North Lillian Way, Hollywood, to handle increasing Pacific Coast business, including large orders from motion picture industry. New firm, which is capitalized at \$150,000, is establishing a factory in San Francisco to fabricate material, purchasing only a few items from the Milwaukee firm, to overcome freight rates to the Far West. John F. Roney, formerly distributor of the Milwaukee firm at Los Angeles, is president of new company. Richard W. Page has been named manager of San Francisco district.

◀ PACIFIC COAST ▶

Bureau of Yards and Docks, Navy Department, Washington, will prepare plans for following work at Puget Sound Navy Yard, Bremerton, Wash.: One-story heavy materials storage and distributing building, cost \$125,000 with equipment; addition to forge and blacksmith shop, cost \$350,000 with equipment; additions to pipe shop, cost about \$90,000 with equipment, including new wing on building to cost like amount; extension to ordnance storehouse, cost \$80,000; new covered steel storage unit, cost \$175,000 with equipment, and additional magazine buildings, cost \$70,000. Appropriations have been authorized in amounts noted.

North American Aviation Corp., 6701 Imperial Highway, Los Angeles, manufacturer of airplanes and parts, has let general contract to Austin Co. of California, 777 East Washington Boulevard, for one-story addition, 60 x 203 ft., for storage and distribution. Cost about \$75,000 with equipment.

Board of Education, Alhambra, Cal., will build a one-story vocational shop at new high school group at Hellman Avenue and Almansor Street, for which total fund of \$800,000 is being arranged through Federal aid. Marston & Maybury, 25 South Euclid Avenue, Pasadena, Cal., are architects; Murray Erick, 811 West Seventh Street, Los Angeles, is engineer.

City Council, Glendale, Cal., plans new steam-electric municipal power plant. Cost about \$1,500,000. Financing is being arranged through Federal aid. Carl Heinze is engineer for project; P. Diederich is superintendent of plants and production.

Bureau of Supplies and Accounts, Navy Department, Washington, asks bids until July 22 for one surface grinder (Schedule 3879), one precision lathe (Schedule 3880); until July 26, one universal shaper, all motor driven (Schedule 3927); until July 29, 1,000,000 lin. ft. of steel cable (Schedule 3923), one pneumatic compression riveter (Schedule 3932) for San Diego Naval Air Station.

◀ FOREIGN ▶

Groupement de l'Electricite, Paris, France, recently organized as an interest of several leading French electric power companies, operating at Paris and other points, headed by Ernest Mercier, Paris, and associates, with capital of 400,000,000 fr. (about \$10,800,000), plans three large hydroelectric generating plants at sites now being selected, with transmission and distributing lines, power substations, switching stations and other operating facilities. Total financing in amount of 3,000,000,000 fr. (about \$81,000,000) has been authorized for entire project.

General Motors of Canada, Ltd., Regina, Sask., plans improvements in local plant, including new tools and equipment for production of 1939 automobile models. Cost about \$100,000.